

RESOLUTION NO. 5687

A RESOLUTION Declaring the Modular Energy Storage Architecture (MESA 2) Energy Storage Project at Everett Substation to be "Special Facilities" for Purposes of RCW 39.04.270 and Authorizing Execution of an Agreement with Energy Services for the Project

WHEREAS, Public Utility District No. 1 of Snohomish County (the "District") has identified energy storage technology as an important component of its strategy of meeting growth first through conservation and then a diverse mix of renewable resource technologies, including distributed generation; and

WHEREAS, while battery-based storage technology is available, the industry has not developed the software and systems that would enable electric utilities to deploy battery-based storage equipment on a modular basis, and to manage the use of that storage as part of its grid operations; and

WHEREAS, District staff is proposing to enter into an agreement for the development and deployment of a prototype that will provide 2.2 megawatt/8 Megawatt-hour capacity from a vanadium flow battery-energy storage system at the District's Everett substation, known as the Modular Energy Storage Architecture (MESA 2) Project ("Project"), for a total cost of \$8,792,000, excluding tax; and

WHEREAS, the District has received approximately \$4,400,000 in funding for the Project from Washington State's Clean Energy Fund; and

WHEREAS, the Project will be developed in two phases, consisting of a system design and project plan, followed by the final design and engineering, equipment procurement and installation of the prototype upon approval of the first phase; and

WHEREAS, the agreement provides that the District will have a perpetual license for the 1Energy software system for this prototype, and the District will take title to the batteries and other equipment upon completion of the Project; and

WHEREAS, this project is the result of a unique collaboration between 1Energy Services, a software development company interested in developing this type of new software system for the electric utility industry, the District, and UniEnergy Technologies; and

WHEREAS, the District has previously entered into an agreement with 1Energy to provide for the development and deployment of a prototype that will provide one-megawatt capacity from a battery-based energy storage system at the District's Hardeson substation (the "MESA-1 Project"); and

WHEREAS, grid energy storage is a nascent field and there are very few entities experienced and qualified to perform this work; and

WHEREAS, 1Energy Systems' applicable experience (including the development of the MESA-1 Project and several other innovative energy storage-related projects) and capabilities in this field are unique; and

WHEREAS, UniEnergy Technologies, the primary subcontractor to be utilized by 1Energy, is uniquely qualified for this project since they are Washington-based, support MESA, are a current District customer, have a commercially available Vanadium-based redox Flow Battery, and have provided the District with extensive energy storage expertise during the grant funding process; and

WHEREAS, staff therefore recommends that all equipment included as part of the Project be declared "special facilities" pursuant to RCW 39.04.270 to enable the District to

contract with 1Energy for the Project without the solicitation of competitive proposals therefore, based upon the facts and circumstances more fully described above; and

WHEREAS, Washington State law provides that with respect to purchases of “special facilities,” the normal competitive bidding requirements may be waived by the Commission provided that reasonable precautions are taken to secure the lowest price practicable under the circumstances; and

WHEREAS, staff’s efforts to ensure that the District has secured the lowest price practicable under the circumstances include the review of pricing information in trade journals pertaining to vanadium-based energy storage systems; research into the experiences of other electric utilities such as Avista, and staff’s own experience with battery-based energy storage systems for MESA 1 and the Admiralty Inlet Tidal Energy Pilot Project, dialogue with a number of other participants in the global battery-based energy storage space; and the issuance of a High Tech Sales and Use Tax deferral from the Washington State Department of Revenue.

NOW, THEREFORE, BE IT RESOLVED by the Commission of Public Utility District No. 1 of Snohomish County, Washington, as follows:

1. Based on the facts set forth above and on staff’s recommendation, all equipment included as part of the Modular Energy Storage Architecture Project shall be deemed “special facilities” for purposes of RCW 39.04.270.
2. The Commission hereby waives the statutory requirements for bid and performance bonds which are normally applicable to competitively bid material purchases that might otherwise apply to the procurement of the equipment for this Project.

3. The proposed agreement with IEnergy Services is hereby approved, and the General Manager or his designee is authorized to execute said Agreement on behalf of the District in substantially the form on file with the Office of the Commission, for a total cost of \$8,792,000, excluding taxes.

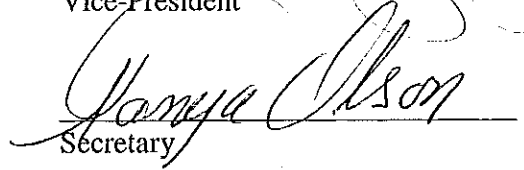
PASSED AND APPROVED this 6th day of October, 2014.

(not present)

President



Vice-President



Secretary

**PROFESSIONAL SERVICES AGREEMENT
(MESA 2)**

This Contract is entered into on 10/6, 2014 (the "Effective Date"), by and between 1Energy Services, LLC (1Energy), located at 811 First Ave., Suite 510, Seattle, Washington, and Public Utility District No. 1 of Snohomish County (the District), located at 2320 California Ave., Everett, Washington.

WHEREAS,

The District, together with 1Energy, has been developing and is in the process of deploying modular energy storage systems using the Modular Energy Storage Architecture ("MESA") to build energy storage prototypes;

The District has been awarded a grant by the Washington State Department of Commerce ("Commerce") to "dispatch energy storage resources from utility control rooms" and "improve the reliability and reduce the costs of intermittent or distributed renewable energy" (the "Grant");

The District wishes to expand the MESA energy storage prototypes to deploy and field test another battery based on the MESA standards (the "MESA 2" system), in order to further promote the MESA standards for the industry, and gain additional experience with a different battery and at a different substation; and

1Energy possesses the expertise to work with and oversee battery and PCS vendors to enable the deployment of MESA technologies with new battery chemistries;

Therefore, the parties to this Contract agree as follows:

I – SCOPE OF WORK

1Energy shall (1) develop the System Design and Project Plan for MESA 2 Prototype as further described in the Scope of Work attached hereto as Exhibit 1 (the "SOW"), and (2) subject to District approval of the System Design and Project Plan, develop and deploy the MESA 2 Prototype (collectively the "Work"), and shall perform all other technical tasks required to ensure that all aspects of the Work meet the requirements and specifications set forth elsewhere in this Contract, except as otherwise specifically set forth in the SOW.

II – INDEPENDENT CONTRACTOR

It is understood and mutually agreed upon by the parties that 1Energy shall perform the Work as an Independent Contractor and not as an agent or employee of the District.

III – TERM, NOTICE TO PROCEED AND TIME OF PERFORMANCE

The term of this Contract shall begin on the Effective Date and continue for a period of eighteen (18) months following 1Energy's receipt of the District's written authorization to proceed with the Work (the "Design Notice to Proceed") or such other date that the parties mutually agree upon in writing (the "Completion Date"). Promptly after receiving the District's Design Notice to

Proceed, IEnergy shall begin to develop the System Design and Project Plan (the "Plan"). IEnergy will not begin any work on the Plan until IEnergy receives the Design Notice to Proceed with respect to such Plan. The District shall pay the Milestone A amount relating to IEnergy's development of the Plan as described in the SOW. Any costs incurred by IEnergy or its subcontractors prior to its receipt of the Design Notice to Proceed shall not be reimbursed by the District. Furthermore, IEnergy and its subcontractors will not begin the Work described in the Plan (e.g. procuring equipment and hardware) until IEnergy receives a "Construction Notice to Proceed" with respect to such Plan. IEnergy shall complete all specified contract Work, including submission of reports and other required documentation, within the schedules set forth in the SOW and the System Design and Project Plan. Except as otherwise provided in this Contract, any revision of such schedules shall be by mutual agreement, in writing, between the District and IEnergy.

Either party may terminate this Contract for any reason or for no reason after IEnergy delivers to the District the System Design and Project Plan but before the District delivers to IEnergy the Construction Notice to Proceed with respect to the Work described in the Plan.

IV - COMPENSATION AND PAYMENT

- A. Progress payments shall be established by identifiable milestones associated with the Work, as more fully specified in Section 1.4 of the SOW. Payments shall not become due until the identified milestone and all previous milestones have been accomplished as described in the SOW and the System Design and Project Plan. With respect to Milestone Payments B-D (as specified in the SOW), IEnergy shall forward directly to the District, as part of the documentation supporting such payment request, the invoice from UniEnergy Technologies, LLC ("UET") which corresponds to any amounts payable to UET in connection with such milestone, and the District will make payment directly to UET in the manner requested and on the terms specified in such invoice.
- B. Invoices for progress payments shall be submitted by IEnergy to the District upon completion of the applicable milestone described in the SOW, provided, however, that in the event of a delay by the District described in Article VII, Section A, IEnergy may submit an invoice for expenses incurred since the last payment, together with a progress report for the then current milestone. All invoices shall clearly identify the applicable milestone number, shall describe and document, to the District's and Commerce's satisfaction, a description of the work performed and shall include the Commerce contract reference number (15-92201-003). The invoices shall also clearly indicate that the invoice is exempt from sales taxes and shall include the District's R&D tax deferral certificate number. The Contract Price (as defined in the SOW) for the Work is inclusive of all taxes, fees, excises, and charges that are now or hereafter imposed by public authority. Invoices must include itemization of any services rendered, or equipment shipped, in sufficient form and detail to permit review by the District. IEnergy shall submit a separate invoice for each progress payment or other payment (for example, extra work) identified in the SOW. Invoices shall be submitted electronically or in triplicate and directed to the attention of the District. Payment terms shall be net 30 days from receipt of payment invoice.

- C. Payment for a milestone shall not forfeit the District's right to inspect and accept the Work and its documentation, nor shall the withholding of any payment, or prorated portion thereof, preclude the District from pursuing any other rights or remedies it may have under the Contract, in law or in equity.
- D. Payments not made within 30 days from receipt of payment invoice, together with all applicable documentation or deliverables supporting the milestone and the invoice, shall be subject to late charges equal to the lesser of (a) one percent (1%) per month of the overdue amount or (b) the maximum amount permitted under applicable law, provided, however, that when the District has delivered to IEnergy a written notice, within ten (10) days of receipt of such invoice and supporting documentation, identifying the reasons it believes the payment is not yet due, no late charges shall accrue from the date of the invoice until the date the dispute is finally resolved. The District will reimburse IEnergy for any costs or expenses (including, but not limited to, reasonable attorney fees) incurred by IEnergy to collect any amount that is not paid by the District when due. Unless the written notice described above has been submitted by the District, if an invoice remains unpaid forty-five (45) or more days from the invoice date, IEnergy may, in its discretion, suspend providing the Work without any liability to IEnergy until such invoice is paid in full, and any applicable schedule automatically will be revised to accommodate such suspension of the Work.

V – ASSIGNMENT AND SUBCONTRACTS

Except as otherwise provided in this contract, this contract shall not be assigned by either party, either in whole or in part, without the prior written approval of the other. Any attempted assignment without such written consent shall be void.

- A. Consistent with the System Design and Project Plan, IEnergy may enter into contracts with other firms for services not normally performed by IEnergy; provided that IEnergy must obtain prior written consent from the District (which shall be contingent upon the receipt of written approval from Commerce) for any subcontractor that is not an "Exempt Subcontractor." For purposes of this Contract, an "Exempt Subcontractor" shall mean those entities providing goods or services in which the goods purchased are purchased based on specifications clearly spelled out with no services attached; or where services are purchased that are of such a routine and predictable nature that there is no need for a formal contractual agreement other than a purchase order.
- B. IEnergy shall also include a provision in all subcontracts that, in the event IEnergy's services are terminated by the District pursuant to Article XXV, Section A, the District shall have the right to assume IEnergy's rights and obligations under the subcontract at the District's option.
- C. The following is a known list of proposed subcontractors that are not an Exempt Subcontractor as of the date of this Contract:
 - UniEnergy Technologies, LLC
 - Clean Harbors, Inc.

The District will work expeditiously immediately after execution of this Contract to obtain the written approval for such subcontractors from Commerce. The District will notify IEnergy immediately if the District or Commerce does not approve such subcontractors.

VI – TEST AND INSPECTIONS

Except to the extent otherwise provided in the SOW, IEnergy shall conduct at its responsibility and expense all tests and inspections called for by the Contract. IEnergy shall repair and replace, without cost or unreasonable delay, anything found defective by tests and inspections and also conduct at its own responsibility and expense re-inspection and retesting as necessary to ensure that the defects have been corrected and no additional defects have been introduced. Any inspection required by statutory authority, governmental regulation, or other similar authority on the codes or standards must be carried out by IEnergy at its authority and expense.

The District shall have the right at its own expense to inspect or observe the production, inspection, or testing of the Work. IEnergy shall provide reasonable notification of tests and inspections that will occur, and the District shall provide reasonable advance notice to IEnergy of its intent to inspect or observe the production, inspection, or testing of the Work. The witnessing of IEnergy's tests and inspections by the District shall not relieve IEnergy of any of its responsibilities or liabilities under the Contract, nor be interpreted in any way as implying acceptance of the Work.

VII – NOTICE OF DELAY AND EXTENSION OF TIME

- A. Should IEnergy's timely performance of the Work under this Contract be delayed by the unavailability of personnel, data, facilities, or equipment to be provided by the District, by any unjust act, negligence, or neglect of the District, or by any change in the Work, IEnergy shall notify the District in writing no later than 14 calendar days after the occurrence of the facts and circumstances giving rise to such delay, and the parties will negotiate a reasonable extension for the time of completion for the affected Work. Except as otherwise provided in this Contract, IEnergy shall not be entitled to any extension of the deadline for completion of any payment milestone unless written notice of such delay has been provided as set forth herein.
- B. IEnergy shall advise the District in writing of (1) any impending failure to meet established milestones or delivery dates caused by IEnergy's failure to timely perform the Work or by IEnergy's desire to increase the likelihood of success of the Work and (2) the action that IEnergy proposes to remedy the situation. Notice shall be provided promptly, but not later than five business days, after IEnergy is aware of the situation; however, such notice shall not relieve IEnergy from any existing obligations regarding performance and there shall be no waiver of performance by the District. Upon the District's receipt of the notice, the parties will use reasonable efforts to negotiate an extension of the applicable milestone or delivery date.
- C. A party will not liable for failure to perform the party's obligations if such failure results from any act of God (including, without limitation, fire, flood, earthquake, storm,

hurricane, or other natural disaster), war, invasion, act of foreign enemies, civil war, rebellion, revolution, insurrection, military or usurped power or confiscation, terrorist activities, nationalization, government sanction, blockage, embargo, labor dispute, strike, lockout, or interruption or failure of electricity (each, a "Force Majeure"). No party is entitled to terminate this Contract under Article XXV, Section A in such circumstances. The parties will negotiate a reasonable extension for the time of completion for the Work impacted by a Force Majeure.

VIII – APPROVALS

As called for in the Contract, IEnergy will provide specific documents in writing for approval by the District. The District's approval or conditional approval with comment signifies permission to IEnergy to proceed with the Work and indicates that the District has seen nothing in the document at variance with the Contract. IEnergy's proceeding with the Work prior to the District's approval is at its own risk. Neither approval nor conditional approval with comment shall relieve IEnergy of any of its responsibilities under the Contract. Nothing in this paragraph shall prevent the District from withholding final acceptance if grounds for withholding final acceptance exist.

IX – STANDARD WORK SCHEDULE

Work scheduled and performed by IEnergy on the District's premises shall conform to the District's working hours and shall account for the District's observed holidays. The District must approve any exceptions to the District's standard work schedule, which approval will not be unreasonably withheld.

X – PUBLIC RECORDS AND AUDIT RIGHTS

- A. The District is subject to Washington's Public Records Act, Chapter 42.56 RCW (the "Act"), and the Act defines "public record" very broadly. Any records or documents, including electronic records, relating to or arising out of this contract are subject to that Act.
- B. Public Records, including this Contract, may be required to be made available for inspection or copying if a request to do so is received by the District. Any such request received by IEnergy, including oral requests, must be referred to a District Public Records Officer immediately so that the District may acknowledge the request within five (5) business days of receipt. IEnergy shall not make Public Records available to anyone requesting them unless authorized to do so by the District.
- C. During the term of this Contract and for two years thereafter, the District and its agents shall have the right to inspect and to perform audits of IEnergy's records pertaining to this Contract. The District must provide IEnergy with at least ten days' prior written notice of the District's intent to audit, and the District may not perform more than one audit during any 12-month period.
- D. IEnergy shall make records available as required by this Article without charge to the District, provided that the District will bear all costs of inspection and copying.

E. Audits by Commerce.

1. IEnergy (i) shall maintain its records and accounts so as to facilitate audits and shall ensure that subcontractors (other than Exempt Subcontractors as defined in Article V.A.) also maintain auditable records, and (ii) is responsible for any audit exceptions incurred by its own organization or that of its subcontractors. Commerce may require that IEnergy procure an audit, at the IEnergy's expense, as described in Subsection 2 below, if it reasonably believes that IEnergy impermissibly expended grant funds received under the Grant. In no case may Commerce request a separate audit more frequently than once in a twelve-month period. Commerce reserves the right to recover from IEnergy all disallowed costs resulting from the audit. Responses to any unresolved findings and disallowed or questioned costs shall be included with the audit report. IEnergy must respond to Commerce requests for information or corrective action concerning audit issues within thirty (30) days of the date of request.
2. In the event an audit is required by Commerce, the Office of the State Auditor or a certified public accountant selected by the Contractor shall conduct the audit. With respect to IEnergy, any audit shall be limited to determining that IEnergy has been paid its applicable software license and service fees by the District. With respect to any other subcontractors, the scope of the audit, if conducted by a certified public accountant, shall be limited to determining that the compensation provided to such subcontractor under the applicable subcontract has been used by such subcontractor solely to complete the Work described in this Contract.
3. Contractor must send a copy of any required audit report no later than nine (9) months after the end of Contractor's fiscal year(s) by sending a scanned copy to auditreview@commerce.wa.gov or a hard copy to: Department of Commerce, ATTN: Audit Review and Resolution Office, 1011 Plum Street SE, PO Box 42525, Olympia WA 98504-2525.
4. If an audit is required, in addition to sending a copy of the audit, when applicable, the Contractor must include a corrective action plan for audit findings within three (3) months of the audit being received by Commerce.

F. See Sections 30 and 31 of Exhibit 2 for additional terms regarding records maintenance and rights of inspection. Except as otherwise specifically provided herein, in the event of any conflict between this Article X and such additional terms, the terms set forth in Exhibit 2 shall control.

XI – WARRANTY AND MAINTENANCE

Where IEnergy utilizes hardware or software it purchased from a third party, IEnergy will assign, convey, and/or pass through any standard warranties applicable to such hardware or software to the District and will reasonably cooperate in enforcing them. With respect to batteries and equipment provided by IEnergy, IEnergy shall ensure that any such warranty coverage is in effect for a minimum of one (1) year. Such warranty pass-through will be

supplemental to, and not relieve 1Energy from, 1Energy's other obligations set forth herein. In addition to the warranty, 1Energy shall require UET to provide maintenance on the UET AC battery at no cost during the warranty period.

With regard to the Work Product, 1Energy warrants for a period of one year that it will meet the criteria set forth in the SOW and the System Design and Project Plan, and upon Final Acceptance of the Work as described in Article XIV, 1Energy agrees to maintain the software provided under this Contract, consistent with the specifications contained in the SOW and the System Design and Project Plan, for one (1) year from the date of such Final Acceptance. Such maintenance obligation includes providing and installing patches, updates, upgrades, releases, new versions of the software, and other software maintenance services, only to the extent generally made available by 1Energy, at no additional charge to the District. 1Energy's 1-year warranty and maintenance obligation shall also include the obligation to take commercially reasonable actions to correct all Errors, defined as a failure of the Work to meet all requirements set forth in the SOW and the System Design and Project Plan, whether such Errors are identified by the District, 1Energy, or other users. 1Energy will have no obligation or liability to perform any maintenance that arises out of or relates to the District's errors or failure to comply with the documentation provided by 1Energy. If 1Energy performs any maintenance or warranty services that are outside the scope of the foregoing maintenance obligation, such maintenance or warranty services will be performed by 1Energy on a time and materials basis at 1Energy's then current rates pursuant to a separate written agreement between 1Energy and the District. 1Energy's maintenance obligations shall terminate if the District, pursuant to Article XV ("Interference With Operations"), refuses to allow 1Energy to upgrade the software within a reasonable timeframe to its current version generally available to other customers.

DISCLAIMER OF WARRANTIES. EXCEPT AS OTHERWISE PROVIDED IN THIS CONTRACT, ALL WORK AND SERVICES PROVIDED BY 1ENERGY AND ITS SUBCONTRACTORS ARE PROVIDED "AS IS" AND WITHOUT ANY WARRANTY WHATSOEVER. 1ENERGY HEREBY DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, QUIET ENJOYMENT, TITLE, AND NON-INFRINGEMENT.

XII – ON SITE SERVICE

When on-site services for installation, startup, or repair are furnished by 1Energy, such services shall be provided with reasonable dispatch and shall be rendered in a competent and diligent manner and in accordance with the Contract, accepted industry practice, and any applicable professional standards.

XIII – RIGHTS TO USE AND ADAPT

The District may use, modify, expand, add to, move to a new location, or in any way adapt the Work or any portion of it to best suit the District's needs as determined by the District at any time; provided, however, that the District may not reproduce, distribute, modify, or create derivative works of any software provided in connection with the Work and that the District may not use, modify, expand, add to, move to a new location, or in any way adapt the Work or any

portion of it for the purpose of competing with the business of IEnergy.

The District's rights include adding hardware or software from other suppliers or vendors whether or not they were previously involved in the Work, providing those suppliers with documentation of the Work as needed for proper interfacing of the additions to the Work, modifying the Work to permit the additions, and continuing to use the Work and all portions of it, whether modified or not, with the additions. The District has the further right to use the Work, with or without additions, for purposes not envisioned at the execution of the Contract and not described therein.

NOTWITHSTANDING THE FOREGOING, (1) NEITHER IENERGY NOR ANY OF ITS SUBCONTRACTORS OR VENDORS SHALL BE LIABLE FOR ANY DAMAGE, CLAIM, COST, OR LIABILITY THAT ARISES OUT OF OR RELATES TO ANY ACTUAL OR ATTEMPTED MODIFICATION, EXPANSION, ADDITION, MOVEMENT, OR ADAPTATION OF THE WORK OR ANY PORTION OF IT BY THE DISTRICT OR ANY THIRD PARTY; (2) NEITHER IENERGY NOR ANY OF ITS SUBCONTRACTORS OR VENDORS SHALL BE LIABLE FOR ANY DAMAGE, CLAIM, COST, OR LIABILITY THAT ARISES OUT OF OR RELATES TO ANY ACTUAL OR ATTEMPTED USE BY THE DISTRICT OR ANY THIRD PARTY OF ANY THIRD-PARTY HARDWARE OR SOFTWARE WITH THE WORK OR ANY ACTUAL OR ATTEMPTED USE OF THE WORK FOR PURPOSES NOT CONTEMPLATED BY IENERGY ON THE EFFECTIVE DATE; AND (3) ANY WARRANTY PROVIDED BY IENERGY OR ITS SUBCONTRACTORS OR VENDORS IMMEDIATELY SHALL TERMINATE AND BECOME VOID UPON ANY ACTUAL OR ATTEMPTED MODIFICATION, EXPANSION, ADDITION, MOVEMENT, OR ADAPTATION OF THE WORK OR ANY PORTION OF IT BY THE DISTRICT OR ANY THIRD PARTY OR UPON ANY ACTUAL OR ATTEMPTED USE BY THE DISTRICT OR ANY THIRD PARTY OF ANY THIRD-PARTY HARDWARE OR SOFTWARE WITH THE WORK OR ANY ACTUAL OR ATTEMPTED USE OF THE WORK FOR PURPOSES NOT CONTEMPLATED BY IENERGY ON THE EFFECTIVE DATE.

These rights and limitations shall survive the expiration of the Contract.

XIV – FINAL ACCEPTANCE

Section 2.2 of the SOW requires the development of a System Design and Project Plan as part of Milestone A. As provided in the SOW, this System Design and Project Plan, and each of its components, must be approved by the District in writing before it takes effect and can be implemented. One component of the System Design and Project Plan is a Verification Plan, which will include criteria governing the Final Acceptance of the Work ("Final Acceptance Criteria").

Final Acceptance of the Work will occur only after satisfaction of all Final Acceptance Criteria, which shall include but not be limited to successful completion by IEnergy of all previous payment milestones described in section 1.1 of the SOW and all other Work described in the SOW and System Design and Project Plan, as may be amended as provided hereunder, and after the District's receipt of all final documentation reflecting all changes and corrections in the Work.

1Energy shall request final acceptance of the Work in writing stipulating:

- The Work is completed;
- All Final Acceptance Criteria have been met;
- Final acceptance and payment does not constitute a waiver by the District of any rights with respect to 1Energy's continuing obligations under the Contract; and
- A waiver of all known claims beyond final payment by 1Energy against the District other than those previously made in writing and still unsettled.

Within thirty (30) days after the requirements for final acceptance have been met, the District will issue a Final Acceptance Certificate.

XV – INTERFERENCE WITH OPERATION

1Energy shall not interfere with normal operation of the District's facilities or equipment or the work of any suppliers or subcontractors on the District's premises. When 1Energy anticipates unavoidable interference, it shall so notify the District in advance. The District will determine whether such interference is unavoidable and will, if required, establish the necessary procedures under which the interference will be allowed. The District shall have final determination of priorities in case of conflicts with the operations of others. 1Energy shall not operate any of the District's equipment or control devices or those of any other supplier or subcontractor on the District's premises except at the direction and under the immediate supervision of the District.

XVI – INDEMNIFICATION; LIMITATION OF LIABILITY

- A. Except as otherwise provided in this Contract, 1Energy hereby indemnifies and agrees to hold harmless and release the District and its commissioners, officers, employees and agents and each of the heirs, personal representatives, successors and assigns of any of the foregoing from and against any and all liabilities, losses, claims, damages, costs, demands, fines, judgments, penalties, obligations and payments, together with any reasonable costs and expenses (including, without limitation, reasonable attorneys' fees and out-of-pocket expenses and reasonable costs and expenses of investigation) incurred in connection with any of the foregoing, to the extent they directly result from, relate to or arise out of or in connection with (i) any failure of 1Energy (or anyone directly or indirectly employed by 1Energy, including subconsultants of 1Energy) duly to perform or observe any material term, provision, covenant, agreement or condition hereunder to be performed or observed by or on behalf of 1Energy, (ii) any negligence or intentional misconduct of 1Energy (or anyone directly or indirectly employed by 1Energy, including subconsultants of 1Energy) or (iii) any infringement by 1Energy of any patent or copyright of any third party or any misappropriation by 1Energy of any trade secret of any third party (provided, however, that the foregoing indemnity will not apply to any such liabilities to the extent that they (a) arise out of post-delivery modifications to the Work undertaken by someone other than 1Energy or (b) are attributable to the

combination, operation, or use of the Work with third-party devices or programs not contemplated by the Plan).

- B. Solely and expressly for purposes of its duties to indemnify and hold harmless the District as set forth above, IEnergy specifically waives any immunity it might have under the State Industrial Insurance law, Title 51 RCW, or any similar worker's compensation act, in the event that a claim is made against the DISTRICT for an injury to any employee of IEnergy. IENERGY ACKNOWLEDGES THAT THIS WAIVER HAS BEEN MUTUALLY NEGOTIATED BY THE PARTIES.
- C. Except as otherwise provided in this Contract, the District hereby indemnifies and agrees to hold harmless and release IEnergy and its directors, officers, employees and agents and each of the heirs, personal representatives, successors and assigns of any of the foregoing from and against any and all liabilities, losses, claims, damages, costs, demands, fines, judgments, penalties, obligations and payments, together with any reasonable costs and expenses (including, without limitation, reasonable attorneys' fees and out-of-pocket expenses and reasonable costs and expenses of investigation) incurred in connection with any of the foregoing, to the extent they directly result from, relate to or arise out of or in connection with (i) any failure of the District (or anyone directly or indirectly employed by the District) duly to perform or observe any material term, provision, covenant, agreement or condition hereunder to be performed or observed by or on behalf of the District; (ii) any negligence or intentional misconduct of the District (or anyone directly or indirectly employed by the District); (iii) any use of the Work or the Work Product by the District as described in Article XIII; and (iv) any use of the Work or the Work Product by the District in a manner that is not consistent with the documentation provided by IEnergy or its suppliers or in a manner that is not consistent with standard utility industry practices.
- D. **LIMITATION OF LIABILITY AND DAMAGES.** IENERGY AND ITS SUBCONTRACTORS, INSURERS, DIRECTORS, OFFICERS, EMPLOYEES, AND AGENTS SHALL HAVE NO LIABILITY TO THE DISTRICT FOR ANY LOSS OF PROFITS, SALES, BUSINESS, DATA OR OTHER INCIDENTAL, CONSEQUENTIAL, OR SPECIAL LOSS OR DAMAGE OF ANY KIND OR NATURE, INCLUDING, WITHOUT LIMITATION, EXEMPLARY AND PUNITIVE DAMAGES, RESULTING FROM OR ARISING OUT OF THIS CONTRACT OR ANY SOW OR OTHER ORDER FORM. IENERGY AND ITS SUBCONTRACTORS, INSURERS, DIRECTORS, OFFICERS, EMPLOYEES, AND AGENTS SHALL HAVE NO LIABILITY TO THE DISTRICT FOR ANY LOSSES, CLAIMS, DAMAGES, COSTS, FEES, OR EXPENSES THAT RESULT FROM OR ARISE OUT OF THE DISTRICT'S FAILURE TO COMPLY WITH THE DOCUMENTATION PROVIDED BY IENERGY OR ITS SUBCONTRACTORS. THE TOTAL LIABILITY OF IENERGY AND ITS SUBCONTRACTORS, INSURERS, DIRECTORS, OFFICERS, EMPLOYEES, AND AGENTS TO THE DISTRICT ARISING OUT OF THIS CONTRACT OR ANY SOW OR OTHER ORDER FORM SHALL NOT EXCEED THE TOTAL FEES ACTUALLY PAID TO IENERGY BY THE DISTRICT PURSUANT TO THIS AGREEMENT.

- E. The District acknowledges and agrees that (i) the District has elected to proceed with UniEnergy Technologies LLC ("UET") as the vendor of the "AC battery" for the MESA 2 system; and (ii) because the UET AC battery has never been commercially deployed, there are inherent risks that there may be project delays relating to the final design or performance of the UET AC battery, or the UET AC battery may not perform as represented by UET. The portions of the MESA 2 system for which UET will be responsible are identified in Attachment A.

XVII – CONTROL AND APPROVAL

1Energy shall appoint a Project Leader who will be in charge of the project for 1Energy and have authority to make binding decisions on behalf of 1Energy. All notices regarding changes in the project or revisions to the SOW shall be delivered to the designated Project Leader. 1Energy's Project Leader for this project will be:

Name: Dan Sowder

Title: Director of Project Engineering

Email Address: dans@1energysystems.com

Mailing Address: 811 First Ave., Suite 510,

City, State, Zip: Seattle WA 98104

Phone Number: (888) 452-7715

Fax Number:

- A. 1Energy shall not change or replace its Project Leader without the prior written approval of the District.
- B. The District shall have the right to review personnel assigned to perform the services required of 1Energy and may request 1Energy to replace any individual who is unqualified or otherwise unfit to perform such services. 1Energy will use commercially reasonable efforts to comply with such request.
- C. 1Energy shall proceed with due diligence upon the work necessary to satisfy the terms of this Contract. The District at all times shall have access to the Work being performed by 1Energy under this contract, including information regarding the progress of the Work and other matters pertaining thereto.
- D. The District's Project Leader will be in charge of the project for the District and have authority to make decisions on behalf of the District. The District's Project Leader for this project will be:

Name: Kevin Lavering

Title: Senior Project Manager

Email Address: kglavering@snopud.com

Mailing Address: P.O. Box 1107, M/S ECDC-1

City, State, Zip: Everett, WA 98206-1107

Phone Number: (425) 783-4325

Fax Number:

- E. The District shall not change or replace its Project Leader without giving prior written notice to IEnergy.

XVIII – INSURANCE

- A. Prior to the commencement of the work under this contract as set forth below, and at all subsequent times during the term of this contract, IEnergy shall obtain and maintain continuously, at its own expense a policy, or policies of insurance as enumerated below. All insurance required by this contract will be primary to any insurance carried by the District. IEnergy shall have no right to call upon or seek contribution from any insurance carried by the District or of its additional insured's.
- B. IEnergy shall, during the term of this contract, comply with all applicable Worker's Compensation Statutes, and in the case of any work sublet, IEnergy shall require the subconsultant similarly to comply with all Worker's Compensation Statutes. Prior to start of work, if applicable, IEnergy and each of its subconsultants shall provide the District with a Certificate of Coverage issued by the Department of Labor & Industries, State of Washington. If not insured through the State of Washington, IEnergy shall provide a Certificate of Insurance evidencing Workers Compensation coverage by a qualified insurer with minimum limits of \$1,000,000. IEnergy shall also take out and maintain during the term of this contract, Employer's Liability Insurance and/or Washington Stop Gap Employer's Liability Insurance with a minimum limit of \$1,000,000 per accident and per employee disease with an insurance company authorized to write such insurance.
- C. IEnergy shall keep in force during the contract period, professional liability insurance ("Errors and Omissions") coverage for acts, errors and omissions arising out of the scope of services in the contract with a minimum limit of \$1,000,000 per occurrence/annual aggregate. If the insurance coverage provided is written on a claims made form, the retroactive date shall be prior to or coincident with the effective date of this contract. The insurance certificate shall state the coverage is claims made and state the retroactive date. Claims made form coverage shall be maintained by IEnergy for a minimum of three (3) years following the termination of this contract, continuing to cover all negligent acts, errors, and omissions of or by IEnergy, its agents, and subconsultants under this contract. IEnergy shall annually provide the District with proof of renewal. If renewal of the claims made form of coverage becomes unavailable, or economically prohibitive, IEnergy shall purchase an Extended Reporting Period Tail or execute another form of guarantee acceptable to the District in its sole discretion to assure financial responsibility for liability for services performed under this contract.

- D. Prior to and as a precondition for the Notice to Proceed with the System Design and Project Plan, IEnergy shall keep in force during the remaining contract period Commercial General Liability insurance written on an occurrence form which shall include the following: bodily injury, including wrongful death, property damage, including loss thereof, along with premises/operations liability, products/completed operations, personal/advertising injury, contractual liability, stop gap or employers contingent liability and fire damage legal liability with minimum acceptable limits of \$1,000,000 per occurrence. The Commercial General Liability policy shall not exclude: broad form contractual liability, broad form property damage including completed operations, XCU coverage or independent contractor's liability.
- E. IEnergy shall keep in force during the contract period Business Automobile Liability insurance including coverage for owned, non-owned, leased or hired vehicles used by or for IEnergy in any capacity in connection with carrying out this contract, written to include bodily injury, including wrongful death, and property damage, including loss of use thereof, with minimum acceptable limits of \$1,000,000 per occurrence.
- F. To the extent required in the reasonable discretion of the District, following the District's acceptance of the System Design and Project Plan as provided for in the Scope of Work, IEnergy shall obtain and maintain "All Risks" forms of "Builders Risks" insurance, as described below, within thirty (30) days of the District's written notification that such additional insurance will be required. No additional work shall be conducted on the Project until such required insurance has been obtained, except to the extent approved by the District in writing. Such "All Risks" forms of "Builders Risks" insurance shall insure against loss of or damage to property (including but not limited to, building materials; tools; equipment; vehicles; watercraft; aircraft; theft; vandalism; malicious mischief; collapse; collapse from defective material or methods; collapse from faulty design, plans, specifications, or workmanship; debris removal; lifting and moving property of others, windstorm; falsework; testing and startup; temporary buildings; business interruption; demolition; increased cost of construction; soft costs, delay in completion, and IEnergy's fees arising from a covered loss) including Earthquake and Flood on a replacement cost basis and with a waiver of the coinsurance provision, insuring the District, IEnergy, all subcontractors from and against all risks of physical loss or damage to the work, the foundation, (including permanent and temporary building and contents), materials, equipment and supplies for the full insurable value thereof, while in transit to the job site, while there awaiting installation, during installation and all forms of testing, and until completion and acceptance by the District of IEnergy's work hereunder. Such insurance shall be written in an amount at least equal to the initial contract sum as well as subsequent modifications of that sum. The Builders Risk Insurance policy and/or installation floater shall be maintained until final payment has been made or until no person or entity other than the owner has an insurable interest in the property to be covered.
- G. To the extent required in the reasonable discretion of the District, following the District's acceptance of the System Design and Project Plan as provided for in the Scope of Work, IEnergy shall obtain and maintain Contractor's Pollution Liability (CPL) insurance, as described below, within thirty (30) days of the District's written notification that such

additional insurance will be required. No additional work shall be conducted on the Project until such required insurance has been obtained, except to the extent approved by the District in writing. Such CPL insurance shall be written on an occurrence form with minimum limits of \$2,000,000 for the duration of the contract. The CPL insurance is to provide coverage for liability arising from pollution conditions caused by services or operations rendered by or on behalf of IEnergy including negligent actions of subcontractors. The coverage should address bodily injury, property damage and personal injury which arises out of sudden and gradual pollution conditions, unforeseen environmental hazards, unintentional non-compliance with environmental laws, actual or alleged discharge, dispersal, release or escape of pollutants, clean up for pollution conditions both on and migrating from work site, natural resource damage, third party diminution of values, civil fines, penalties and punitive damages (where allowed by law), non-owned disposal sites, transportation coverage, construction and remediation operations, and coverage for emergency response costs resulting from pollution conditions that require immediate action or where mandated by a governmental agency.

If such coverage is written on a claims made form, the retroactive date shall be prior to or coincident with the effective date of the contract. Claims Made form coverage shall be maintained by IEnergy for a minimum of three (3) years following the completion of the project.

- H. IEnergy shall furnish the District with a certificate(s) and endorsement(s) showing evidence of insurance coverage, when such coverage is required, as defined in paragraphs A, B, C, D, E, F, and G above, or with other adequate evidence of such coverage which may be accepted by the District, in its sole discretion, in lieu of such certificate. All policy coverage required under paragraphs D and E above shall be written on an occurrence basis. Insurance policies shall be obtained and maintained with companies rated A- or better by A.M. Best Co.'s Key Rating Guide. No policy may be canceled or materially altered by the insurance company without giving IEnergy thirty (30) days prior written notice of cancellation, lapse or material alteration to the District.
- I. Such insurance in paragraphs D, E, F, and G above, shall include the District, its directors, officers, elected officials, employees and agents as additional insureds with respect to the District's liability arising out of or related to IEnergy's negligent or willful acts or omissions in the performance of services under this contract.
- J. Nothing contained in these insurance requirements shall be construed as limiting the extent of the IEnergy's responsibility for payment of damages resulting from its operations under this contract.
- K. IEnergy shall require and ensure that each of its subconsultants that are not Exempt Subcontractors meets the applicable insurance requirements and specifications of this contract, including the additional provisions set forth in Exhibit 2 hereof. All coverages for subconsultants shall be subject to all of the requirements stated herein unless the District determines in writing that specific types of coverage are inapplicable to a subconsultant's profession. IEnergy shall require each of its subconsultants to furnish to IEnergy a Certificate of Insurance showing evidence of such coverage.

XIX – OWNERSHIP OF WORK PRODUCT; GRANT OF LICENSE

A. Ownership

1. Work Product. All “Work Product” including, without limitation, documents, data, studies, surveys, drawings, maps, photographs and any object or source code for any software developed pursuant to or in connection with this contract, as well as any copyrights, patents, trade secrets, trademarks or other intellectual property developed for or in connection with this contract, shall be exclusively owned by and be the exclusive property of IEnergy, except as otherwise provided in subsections 2 and 3 of this subsection A and subsection C below.
2. Use Case(s). During the project, if either party identifies and documents specific ways to use the energy storage systems, then the parties shall jointly own such use case.
3. The District has the right to determine what data it will generate using the IEnergy Project License and Work, and the District shall own any data generated through the use of the IEnergy Project License and the Work, including (i) data generated from a jointly-owned use case and (ii) all “Use Case Data” as defined in the agreement between the District and Commerce, which shall be hereinafter referred to as the “CEF Use Case Data.”

B. Upon IEnergy's completion of the Work as described in the SOW and upon the District's payment in full to IEnergy of all amounts described in the SOW and any other amounts mutually agreed upon between the parties, IEnergy does hereby grant to the District a perpetual, non-exclusive, royalty-free right and license to use the Work Product (the “IEnergy Project License”), including any software and associated documentation developed by IEnergy, for its business purposes only, and to share such Work Product with consultants and other third parties only on a need-to-know basis to the extent required in connection with such business purposes, provided that (a) the District notifies IEnergy of such disclosure in writing prior to making the disclosure and (b) the third parties first shall be bound by confidentiality obligations that are no less stringent than the confidentiality obligations contained in this Contract and that expressly provide that IEnergy is a third-party beneficiary of such confidentiality obligations (which IEnergy may enforce without the consent of the District) prior to receiving access to such Work Product. The right to use the IEnergy Project License is limited to the energy storage system that will be constructed by IEnergy under this Contract (the District may obtain software licenses for additional energy storage systems as provided in subsection H). The District may not (a) sublicense, lease, rent, transfer, or distribute the Work Product; or (b) cause or permit reverse engineering, disassembly, decompilation, or alteration of the Work product.

C. The District may grant to Commerce a nonexclusive, royalty-free, irrevocable license and right to translate, reproduce, sublicense on the terms set forth herein, prepare derivative works, publicly perform, and publicly display the CEF Use Case Data (the “CEF Use Case Data License”); provided, that if IEnergy notifies the District that the CEF Use

Case Data contains any proprietary and confidential information of IEnergy or its subcontractors, then the District shall clearly mark such information as confidential when providing such information to Commerce, in which event such information shall be protected from disclosure except to the extent otherwise required by law, provided that notification of any proposed disclosure required by law shall be provided to IEnergy (and shall be provided by IEnergy to any subcontractor who owns any portion of such information) in order to provide such party a reasonable opportunity to enjoin the disclosure of such information. Furthermore, subject to the foregoing restrictions pertaining to proprietary and confidential information, Commerce may sublicense the CEF Use Case Data, provided that if the sublicensee has prepared a derivative work that directly or indirectly identifies IEnergy or a subcontractor of IEnergy, the District has the right under its agreement with Commerce to approve such derivative work (which approval may not be unreasonably withheld), and in such event the District and IEnergy and any applicable subcontractor shall work together in good faith to determine if the District shall withhold approval of the public display or dissemination of such derivative work.

- D. IEnergy warrants and represents that IEnergy has all rights and permissions, including intellectual property rights, moral rights and rights of publicity, necessary for the District to grant the CEF Use Case Data License to Commerce, to the extent the applicable data arises from IEnergy's Work Product under this contract (or with respect to subcontractors, under the applicable subcontract).
- E. The CEF Use Case Data License described above and any sublicenses shall survive and expire five years following the end of the term of the agreement between the District and Commerce, unless otherwise agreed by the District and Commerce.
- F. IEnergy shall exert all reasonable effort to advise the District, at the time of the District's delivery of the District's CEF Use Case Data to Commerce, of all known or potential invasions of privacy contained therein and of any portion of such document which was not produced in the performance of the agreement between the District and Commerce (or any subcontract entered into thereunder). IEnergy will provide the District with prompt written notice of each notice or claim of infringement received by IEnergy with respect to any CEF Use Case Data. Except with respect to CEF Use Case Data which includes confidential information of IEnergy or its subcontractors, which shall be clearly marked as such, Commerce shall have the right to modify or remove any restrictive markings placed upon the CEF Use Case Data by IEnergy.
- G. After completion of this Contract, IEnergy may assign its rights under this Article XIX without the written consent of the District.
- H. In addition to the IEnergy Project License granted under this Contract, the District shall also be entitled to the following discounts for IEnergy software licenses purchased for additional energy storage systems:
 - 1st additional energy storage system: 60% off of initial license fee per IEnergy standard price schedule

- 2nd additional energy storage system: 40% off of initial license fee per 1Energy standard price schedule
- 3rd additional energy storage system: 25% off of initial license fee per 1Energy standard price schedule

After the 3rd additional ESS, 1Energy software licenses shall be at 1Energy's standard price schedule. In addition, the discounts above do not apply to any maintenance fees associated with such licenses.

XX – 1ENERGY'S COMPLIANCE WITH LAWS

During the performance of this Contract, 1Energy agrees to comply with all applicable orders, laws, rules and regulations of any governmental authority. In particular, the parties hereby incorporate 41 C.F.R. 60-1.4(a)(7); 29 C.F.R. Part 471, Appendix A to Subpart A; 41 C.F.R. 60-300.5(a)(11); and 41 C.F.R. 60-471.5(a)6; if applicable. 1Energy and any subcontractors shall abide by the requirements of 41 C.F.R. 60-300.5(a) and 41 C.F.R. 60-741.5(a). These regulations prohibit discrimination against qualified protected veterans, and qualified individuals on the basis of disability, respectively, and require affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified protected veterans and qualified individuals with disabilities, respectively.

1Energy shall be solely responsible for ensuring that all work under this Contract is carried out in accordance with the Washington Industrial Safety and Health Act (WISHA).

XXI – CHANGES AND EXTRA WORK

The District reserves the right to order and approve changes to the Work by a written Amendment executed by the parties, and no modification to this Contract may be enforced against a party which has not so consented in writing. All Amendments, when properly executed, shall become a part of this Contract. Any work performed by 1Energy prior to the execution of the amendment(s) by both parties shall be at 1Energy's expense if the amendment increases the original Contract Price.

XXII – PUBLICATIONS

The parties understand and agree that the content and timing of press releases may be important to the widespread adoption of standards consistent with the Work. The parties will be jointly responsible for the content and timing of press releases, and agree not to unreasonably withhold approval for such content and timing. 1Energy may describe and publicize the Work in its marketing material, provided that such descriptions and publications are consistent with press releases and other materials previously approved by the District. 1Energy shall not publicize or advertise at any time any articles, photos, drawings, technical data, or other information regarding the project and that contain confidential information of the District without the prior written approval of the District.

See Section 28 of Exhibit 2 for additional terms regarding publications. Except as otherwise specifically provided herein, in the event of any conflict between this Article XXII and such additional terms, the terms set forth in Exhibit 2 shall control.

XXIII – CONFIDENTIALITY

- A. IEnergy, including its officers, agents, and employees, shall hold and maintain as confidential all information concerning its study findings and recommendations in connection with the project, the business of the District, the District's financial affairs, and the District's relations with its employees and customers, as well as any other information which may be specifically classified as confidential by the District. Notwithstanding the foregoing, IEnergy's use of the Work Product that does not disclose confidential information of the District will not be subject to any restrictions.
- B. If IEnergy provides the District with documents or "writings" (as defined in the Washington Public Records Act, Chapter 42.56 RCW) that IEnergy considers to be confidential or proprietary, IEnergy must prominently mark such documents "Confidential" upon all applicable pages or inform the District of that claim in writing regarding electronic records. If the District receives a Public Records request or a subpoena for any of those documents or "writings," the District will not release them, unless required to do so, sooner than ten (10) days after giving IEnergy written notice in the manner provided herein to allow IEnergy to commence litigation to prevent the release. The District shall have no liability for releasing the documents or "writings" if IEnergy does not commence litigation, as established by court papers served upon the District, to prevent release within the ten (10) day notice period.
- C. The parties agree that the Work Product, the business of IEnergy, IEnergy's financial affairs, and IEnergy's relations with its employees, subcontractors, and customers, is proprietary and are trade secrets of IEnergy.
- D. See Sections 11 and 20 of Exhibit 2 for additional terms regarding confidentiality obligations. Except as otherwise specifically provided herein, in the event of any conflict between this Article XXIII and such additional terms, the terms set forth in Exhibit 2 shall control.

XXIV – SECURITY OF ELECTRONIC AND NATIONAL SECURITY INFORMATION

- A. IEnergy may have access to the District data network (the "Corporate" Network), only if that access is required by the SOW, and then only with District-owned equipment. When using the Corporate Network, IEnergy shall comply with Directive 99, District Information Security, as it may be amended. A copy of Directive 99 will be furnished to IEnergy upon request.
- B. If IEnergy requires access to the Internet while performing this contract, IEnergy may utilize the District's Internet access (the "Guest" Network) for that purpose and when doing so may use equipment that is not owned by the District. IEnergy shall not use the District Corporate Network for Internet access, except as described in the SOW or as otherwise authorized by the District in writing.

- C. IEnergy may arrange access to either the Corporate Network or to the Guest Network through the Information Technology Services (ITS) help desk with 48-hours' advance notice.
- D. IEnergy may have access to any Critical Infrastructure Information only if that access is required by the SOW. If such access is required by the SOW, such Critical Infrastructure Information shall be specifically identified in the SOW and IEnergy shall: (i) comply with all associated requirements set forth in the SOW; (ii) treat all Critical Infrastructure Information as privileged and confidential, and release the information to any third party, or to any of IEnergy's contractors, subconsultants, or agents, only upon the District's written consent; and (iii) if instructed by the District to file any Critical Infrastructure Information with any federal, state, or local government, prominently mark such information as Critical Electric Infrastructure Information in accordance with 6 C.F.R. § 29.5(a)(3) and ensure that such information is protected in accordance with all applicable laws and regulations. For purposes of this Subsection D, "Critical Infrastructure Information" means any and all information concerning any Critical Asset or Cyber Critical Asset, as identified pursuant to North American Electric Reliability Corporation ("NERC") Standard CIP-002 (including any revision or modification of that Standard adopted by NERC or the Western Electricity Coordinating Council ("WECC")) and any information identified as Critical Energy Infrastructure Information by the Federal Energy Regulatory Commission in 18 C.F.R. §388.113, including any revisions or modifications thereto.

XXV – TERMINATION

- A. If IEnergy materially breaches any of its duties or obligations under this Contract, the District may terminate this contract by giving IEnergy thirty (30) days' written notice of such material breach, unless IEnergy cures the material breach within such 30-day period. In such event, IEnergy shall stop the performance of the Work hereunder except on work, mutually agreed upon in writing between IEnergy and the District, necessary to carry out such termination (the "Termination Work").
- B. In the event of termination, the District shall pay to IEnergy all contract costs incurred prior to termination plus costs relating to the Termination Work. IEnergy shall not be entitled to compensation for lost profit or expectations of profit due to the District's early termination of this contract. All payments shall comply with Article IV above.
- C. In the event of termination, IEnergy shall provide the District with all finished and unfinished Work Product prepared by IEnergy under this Contract. Such materials shall be the property of the District, unless otherwise specified in Article XIX or in writing by both parties. Notwithstanding any other provision of this paragraph, IEnergy shall have the right to maintain copies of records as required by its record keeping responsibilities under applicable law provided IEnergy does not otherwise use or disclose such records.
- D. See Section 35 of Exhibit 2 for terms regarding which provisions will survive any termination of this Contract.

XXVI – NOTICES

All notices required to be given hereunder shall be deemed to be sufficiently given if delivered in person or if sent by U.S. Mail, postage prepaid, to the District's Project Leader or to the IEnergy Project Manager at the addresses set forth above or to the Office of the General Manager of the District, or the Office of IEnergy at the addresses set forth below. Either party may designate other addresses from time to time by giving written notice to the other but notice to more than one address cannot be required. Notice given by U.S. Mail shall be presumed to be received three (3) days after mailing on any day other than a Sunday or a legal holiday. If the last day of the three (3) day period is a Saturday, Sunday or legal holiday the period shall be extended to the end of the next day which is neither a Saturday, Sunday or legal holiday.

Office of the District General Manager:

Street Address: 2320 California Street
Everett, WA 98201

Mailing Address: P.O. Box 1107
Everett, WA 98206-1107

Office of IEnergy:

Street Address: 811 First Ave., Suite 510
Seattle, WA 98104

Mailing Address: same

XXVII – NONWAIVER

The failure of either party to insist upon or enforce strict performance by the other party of any provision of this Contract, or to exercise any right under this Contract, shall not be construed as a waiver or relinquishment to any extent of such party's right to assert or rely upon any such provision or right in that or any other instance; rather, the same shall be and remain in full force and effect.

XXVIII – ENTIRE AGREEMENT

The District and IEnergy understand and agree that the Contract (including all attachments and Exhibits) constitutes the entire agreement and whole contract between them and supersedes all other prior agreements and understandings, whether oral or written. The Contract shall not be modified or amended except by written amendment. This Contract may be executed and delivered by fax or electronically (in PDF) and in two or more counterparts, each of which will be deemed an original, but all of which together will constitute one and the same instrument. The invalidity or unenforceability of any provision of this Contract will in no way affect the validity or enforceability of any other provision.

XXIX -- GOVERNING LAW

This contract shall be governed by the laws of the State of Washington (without regard to any conflicts of law principles applied in that State), with venue for any disputes in Snohomish County, Washington; provided that venue for any matter that is within the jurisdiction of the Federal Court shall be in the United States District Court for the Western District of Washington at Seattle, Washington. Each Party hereby irrevocably waives, to the fullest extent it may effectively do so, the defense of an inconvenient forum to the maintenance of proceedings in such courts. If any action at law or in equity (including arbitration) is necessary to enforce or interpret the terms of any of this Contract or the SOW, the prevailing party will be entitled to reasonable attorney fees, costs, and necessary disbursements in addition to any other relief to which such party may be entitled.

XXX -- THIRD PARTY BENEFICIARIES

This Contract does not and is not intended to confer any rights or remedies upon any person other than the parties, except that it is expressly agreed that UET is an intended beneficiary of Article IV. A, and that such provision may not be amended without UET's prior written consent. Accordingly, in the event that the District fails to comply with the requirement to make certain payments directly to UET as more fully provided in such subsection, UET shall be entitled to bring an action against the District seeking to recover as damages against the District any amounts due to UET pursuant to such provision, together with any additional losses, expenses or costs resulting directly from such failure.

XXXI -- COMPLIANCE WITH COMMERCE TERMS

Except to the extent otherwise approved by the Washington Department of Commerce in writing with respect to specific subcontracts, IEnergy shall (i) comply with the terms set forth in Exhibit 2; (ii) require that every subcontractor (or any subcontractor of any subcontractor) that is not an Exempt Subcontractor (as defined in Article V.A.) also comply with the terms set forth in Exhibit 2; and (iii) require that every subcontractor that is not an Exempt Subcontractor comply with the requirements set forth in Article X, subsection K of Article XVIII, and subsections C-F of Article XIX. For purposes of such Articles, all references to IEnergy shall be deemed to refer to the applicable subcontractor. Except as otherwise specifically provided herein, in the event of any conflict between the terms and conditions set forth herein and those set forth in Exhibit 2, the terms of Exhibit 2 shall control.

[Signature Page Follows]

IN WITNESS WHEREOF, the parties hereto have entered into this contract:

For IEnergy Services, LLC:

Thomas Melling
Signature

Thomas Melling
Name

Exec. VP
Title

10/6/2014
Date

For Public Utility District No. 1
of Snohomish County:

Steven J Klein
Signature

Steven J Klein
Name

General Manager
Title

10/6/2014
Date

REVIEWED BY:

DATE:

EXHIBIT 1 to Professional Services Agreement MESA 2 Prototype – Scope of Work, version 7

This Scope of Work (this "SOW") is subject to the terms and conditions of the Professional Services Agreement (MESA 2) dated October ___, 2014 (Including this Exhibit and all other exhibits and attachments, the "Contract"), between 1Energy Services, LLC ("1Energy") and Public Utility District No. 1 of Snohomish County (the "District"), as amended. Capitalized terms that are used but not defined in this SOW will have the meanings given to such terms in the Contract.

PROJECT SUMMARY: MESA 2 PROTOTYPE

The District has launched the MESA Project (Modular Energy Storage Architecture) to explore scalable energy storage solutions for use in its electric distribution system. A core MESA Project deliverable is to deploy and field test modular energy storage system (ESS) *prototypes*, at more than one District substations, communicating end-to-end with District control center and power scheduling systems.

Under this SOW, the District will engage 1Energy as System Engineer and System Integrator to develop and deploy the MESA 2 prototype. 1Energy will in turn engage the appropriate suppliers to deliver required system components and services.

Consistent with MESA design goals, the District intends that core ESS components be commercially-replaceable by alternate suppliers. Accordingly, 1Energy will accommodate this capability in the MESA 2 prototype and ensure that its suppliers do likewise.

1.1 SCHEDULE

Work performed hereunder will commence on or about the date on which 1Energy receives from the District the applicable Notice to Proceed and is expected to be complete by the Completion Date. A firm project Completion Date for each Phase will be established in the Project Schedule, as part of the Milestone A: Design Stage Gate for each Phase. If 1Energy fails to complete the Work prior to the completion date in the Project Schedule (as such may be amended from time to time by the parties in writing), such failure will be a material breach of this SOW (provided that such failure is not caused by any delay described in Article VII of the Contract), and the District shall have the right, in its sole discretion, to terminate the Contract pursuant to Article XXV of the Contract.

A preliminary high-level schedule of project tasks and milestones is depicted in Section 2.5 herein. This schedule will be refined and updated during the System Design and Project Planning task (see next section), ultimately becoming the Project Schedule.

1Energy shall not perform any Work until 1Energy's receipt of the "Design Notice to Proceed" for the design Work, and then shall not perform any Work related to the procurement and manufacture of hardware until it has received the "Construction Notice to Proceed," as described in Article III of the Contract.

1.2 SYSTEM DESIGN AND PROJECT PLAN (MILESTONE A: DESIGN STAGE GATE)

Under this task of the SOW, 1Energy will initially produce the System Design and Project Plan, covering in detail the components, architecture, schedule, roles and responsibilities of 1Energy, its suppliers and the District. The System Design and Project Plans will include the Project Schedule, the plan and criteria for determining whether the Work is acceptable to the District and thus that Final Acceptance has been achieved (the Acceptance Testing Plan), and other tasks as described herein. Section 2.2, below, enumerates the items to be covered in the System Design and Project Plans.

Developing the first System Design and Project Plan is expected to take approximately three months, from 1Energy's receipt of an applicable "Design Notice to Proceed," as described in Article III of the Contract. At the end of the design phase, this project task will culminate in a Stage Gate, at which point the District will decide, based upon the System Design and Project Plan, whether or not to

**EXHIBIT 1 to Professional Services Agreement
MESA 2 Prototype – Scope of Work, version 7**

proceed with the development and deployment of the MESA 2 prototype. Should the District decide in the affirmative, the District will deliver to 1Energy a subsequent Construction Notice to Proceed. For the avoidance of doubt, either party may terminate the Contract after 1Energy's delivery of the System Design and Project Plan but before the District's delivery of the subsequent Construction Notice to Proceed.

1.3 LOCATION

The MESA 2 prototype will be deployed and field-tested at the District Everett substation.

Prior to field deployment, communications subsystems of the MESA 2 prototype will be tested at the District's smart grid test lab (District Operations Center, South Everett, WA).

Electrical and communications subsystems of the MESA 2 prototype will be tested prior to field deployment at locations provided by 1Energy or its suppliers, as required by the System Design and Project Plan.

1.4 PAYMENT

Upon 1Energy's delivery to the District of the applicable MESA 2 prototype deliverable, District will pay 1Energy the amount specified in the table below. The specific requirements are target dates for each of the Milestones A-E are at the end of this SOW.

Milestone A: Contracting, Design & Permitting (Design Stage Gate)	Milestone B*: Construction Notice to Proceed	Milestone C*: Equipment Delivery, Installation & Construction	Milestone D*: Systems Integration, Commissioning & Acceptance Testing	Milestone E*: Support for PUD's Use Case Data Obligations	Total
\$615,440 7%	\$3,516,800 40%	\$1,758,400 20%	\$2,461,760 28%	\$439,600 5%	\$8,792,000 100%

** Subject to District approval of System Design and Project Plan at Milestone A Stage Gate.*

Payments for Milestones B-E are subject to District's prior approval of System Design and Project Plan, and decision to proceed with development and deployment of the MESA 2 prototype, per Section 1.2, above.

Payment amounts may be changed by mutual written consent of the District and 1Energy, for example based upon project changes or augmentations determined by the System Design and Project Plan, provided that except as provided in Section 2.5 the total amount payable under this contract shall not exceed \$8,792,000 (the "Contract Price").

Except as otherwise specifically set forth in subsection A of Article IV of the Contract, 1Energy will be solely responsible for compensating its suppliers under the MESA 2 prototype.

If the UET AC battery does not meet one or more of the three Discharge Capabilities shown in Table 2 of Attachment A at the time of Final Acceptance, then the portion of the total contract amount which is attributable to 1Energy's subcontract with UET shall be reduced by a percentage which is equal to the corresponding percentage reduction in the overall system capability specified in Attachment A. In addition, if the UET AC battery does not meet one or more of other UET AC battery system requirements in Attachment A at the time of Final Acceptance, then the portion of the total contract amount which is attributable to 1Energy's subcontract with UET shall be reduced by a reasonable amount mutually agreed upon by the District, 1Energy, and UET, and if the parties are not able to reach an agreement after 30 days, then the parties shall agree upon a third party to decide such amount.

1.5 DISTRICT PROJECT LEADER

The District's Project Leader for the MESA 2 prototype project is specified in Article XVII of the Contract.

EXHIBIT 1 to Professional Services Agreement
MESA 2 Prototype – Scope of Work, version 7

2. OVERVIEW

Under this SOW, 1Energy will: 1) develop the System Design and Project Plan for a MESA 2 prototype ESS based on the Target Capabilities listed below and specified in the SN2-ES-01 – Target Capabilities and Requirements (Attachment A); and, 2) subject to the District's express written approval of the System Design and Project Plan (which may occur by or be contained in an electronic mail message), develop and deploy the MESA 2 prototype, which will meet all of the requirements and specifications set forth in the System Design and Project Plan to be developed pursuant to Section 2.2 below, as well as performance and documentation requirements set forth in Attachments A and B, respectively.

2.1 MESA 2 PROTOTYPE – TARGET CAPABILITIES

The District has established the following target capabilities for the MESA 2 prototype:

- At least 2.2 MW real power, 1.5 MVAR reactive power or any combination of real and reactive power within the 2.2 MVA circle.
- At least 8.0 MWh of energy storage (at ~1MW).
- Installed at the District's Everett substation (unless another substation is mutually agreed to in writing during System Design).
- Communicates with the District SCADA System, Distribution Management System (DMS), Enterprise Solution Software, and power scheduling systems.
- Interfaces from UET BMSs to 1Energy's site controller support MESA device standards (i.e. both battery and PCS) communication protocols, and 1Energy's site controller supports MESA ESS standards to the District's SCADA, DMS, Enterprise Solution Software and power scheduling systems.
- Communicates and interacts with the 1Energy Optimizer.
- UET's batteries are tested and a report is delivered by a recognized third party prior to Construction Notice to Proceed verifying that the UET batteries satisfy the Attachment A performance requirements.

2.2 SYSTEM DESIGN AND PROJECT PLANS

The System Design and Project Plan will include the elements listed below, which may be changed or augmented by mutual agreement of the District and 1Energy:

- Final Target Capabilities (updates, if any, to Section 2.1, above)
 - Part of Architectural Description and Specification (listed below)
- Performance requirements, similar in form and content to Attachment A.
- System Design documentation, similar in form and content to Attachment B, and including:
 - Architectural Description and Specification
 - Architectural diagram and description for the major components and assembly
 - As built specifications
 - Electrical interface (physical and protocol) between major components specification
 - Software architecture and specification
 - Bill of materials
 - List of components that make up the product
 - Integration Plan

EXHIBIT 1 to Professional Services Agreement
MESA 2 Prototype – Scope of Work, version 7

- Top level assembly and installation diagram
 - Personnel safety (This includes the District, 1Energy employees and 1Energy's subcontractors)
 - Site preparation and layout
 - Product assembly and installation procedure
 - Power-up sequence and plan
 - Commissioning plan
 - Communication with the District's electrical grid operating and control software systems
- Verification plan
 - Plan for verifying the MESA 2 prototype meets all requirements set forth in the System Design and Project Plan, this SOW, and all attachments, including but not limited to the development of mutually-agreed-upon final acceptance criteria
 - Includes all verification activities, including but not limited to verification by 1Energy, third party test labs, and the District
 - Quality assurance/quality control (QA/QC) plan
- Hazard analysis
 - Identified safety hazards and associated mitigations
 - Arc Flash Study
- District deliverables, similar in form and content to Attachment C
- Roles and responsibilities, similar in form and content to Attachment D
- Training plan
 - Describes training of users
 - Training of emergency responders (Internal and External)
- Operations and maintenance plan
 - User manual
 - Maintenance manual
 - Includes both hardware and software
- Operations and maintenance cost
 - Ongoing costs associated with the operation of the product (e.g. filters, fluids, etc.)
- Warranty and ongoing support plan
- List of documentation
 - List of all documentation to be provided by 1Energy to the District
 - List of all drawings and associated estimated delivery dates
- Acceptance Testing Plan
- Project Schedule (see preliminary timeline Section 2.5, below)
- Plan for satisfying the use case requirements of Commerce for the MESA 2 prototype
- Final payment schedule (updates, if any, to Section 1.4, above), and cost breakdowns
- Public Relations (communications plan)
- Security Plan
 - Physical
 - Cyber

EXHIBIT 1 to Professional Services Agreement
MESA 2 Prototype – Scope of Work, version 7

2.3 ELECTRICAL ASSEMBLY

The battery container interconnection assembly work at the substation will be the responsibility of UET. This includes but is not limited to all power cable, control cable, and communication interconnections between the UET battery containers.

2.4 DESIRED OUTCOMES

Desired outcomes of the MESA 2 prototype project include:

- A platform for learning, based on 1) experience gained from fielding a system, and 2) insights gained from simulating multiple systems across various configurations, scales and scenarios.
- Open architecture proof of concept that 1) supports multiple battery types from different manufacturers, and 2) delivers open interfaces to enable a range of suppliers (batteries, power conversion and others) in the emerging ESS ecosystem.

2.5 TITLE TO PROTOTYPE EQUIPMENT

Subject to Article XIX of the Contract, title to the MESA 2 prototype shall pass to the District upon the conclusion of the project and payment of the final payment milestone. 1Energy shall provide a bill of sale upon request by the District.

2.6 POST SYSTEM DELIVERY SUPPORT

1Energy shall design the delivery of data from the MESA 2 prototype project to the District data historian so that it provides the information about the MESA 2 prototype project that is required under the Clean Energy Fund (CEF) Use Case Data requirements. Following the acceptance of the MESA 2 prototype project, 1Energy and its subcontractors shall provide reasonable support to the PUD with respect to such CEF Use Case Data capture and delivery to the District's data historian. Such support shall include making reasonable updates to the system to update data content; provided, however, that if there is a material change to the CEF Use Case Data requirements after acceptance of the System Design and Project Plan, then the District and 1Energy shall agree on reasonable adjustments to the contract to reflect the material change.

2.7 PRELIMINARY TIMELINE FOR MESA 2 PROTOTYPE

Milestone Project Activity, Task Key Deliverable(s), and Dates

MILESTONE A: 12/31/2014

1. Contracting

- Commerce approval of UET as subcontractor
- 1Energy NTP from District
- UET NTP from 1Energy

2. Engineering Design*

- System General {90 % design submittal}
- BESS Design Criteria {Design Basis final draft}
- Control System Development {90 % design submittal}
- Site Civil, Ground grid {90 % design submittal}
- Structural/Foundations {90 % design submittal}

EXHIBIT 1 to Professional Services Agreement
MESA 2 Prototype – Scope of Work, version 7

- Security {90 % design submittal}
- Electrical Systems {90 % design submittal}
- Protection & Communications {System studies & designs issued}
- Substation Integration {90 % design submittal}
- IT/Software/Digital Systems {90 % design submittal}
- SCADA {90 % design submittal}

*NOTE: The District will engage HDR to thoroughly review the engineering design documents after 60% design submittal. Even though HDR will also review the engineering design documents, their review is not required for the completion of 90% design submittal.

3. Permitting & Studies

- Sufficient documentation so that the District can apply for county construction permits in hand by 12/1/2014 (Note: The parties agree to expedite completion of the applicable engineering design documents and other information that will be necessary for the PUD to submit applications for county construction permits by 12/1/2014.)

MILESTONE B: 3/31/2015

4. Major Equipment Procurement

- Third party test of UET battery string {Third party report}
- Completion of end-to-end MESA communication test {Test report}
- NTP (Major Equipment Ordered) {NTP}

MILESTONE C: 9/30/2015

5. Equipment Delivery, Installation & Construction

- Electrical Materials {BOM of items delivered}
- Battery & PCS Assy {Certified FAT report}
- Protection & Communication {System components FOB}
- Cable & Electrical BOS {Substantial Completion}
- SCADA RTU {Installed & Configured}
- Protection & Communications {Installed & Configured}

MILESTONE D: 10/31/2015

6. Systems Integration, Commissioning, Acceptance Test

- Battery unit {Substantial Completion}
- PCS unit {Substantial Completion}
- Combined system testing {Certified test report}

MILESTONE E: 12/31/2015

7. Analytics & Monitoring

- Support for PUD's Use Case Data Obligations {PUD provides first data set to the PNNL}

**EXHIBIT 2 to Professional Services Agreement
MESA 2 Prototype – Additional Commerce Terms**

This Exhibit 2 is subject to the terms and conditions of the Professional Services Agreement (MESA 2) dated October __, 2014 (the "Agreement"), between 1Energy Services, LLC ("1Energy") and Public Utility District No. 1 of Snohomish County (the "District"), as amended. Capitalized terms that are used but not defined in this Exhibit 2 will have the meanings given to such terms in the Agreement. In this Exhibit 2, all references to the "Contractor" or "contractor" shall be applicable to 1Energy or any subcontractor that is not an Exempt Subcontractor.

The Section numbers shown below correspond to the pertinent sections of the Capital Grant Agreement between the District and Commerce dated July 8, 2014, which is the source of the applicable flowdown requirements.

SPECIAL TERMS & CONDITIONS

4. HISTORICAL OR CULTURAL ARTIFACTS

Certain capital construction projects may be subject to the requirements of Washington State Executive Order 05-05 "Archaeological and Cultural Resources". In the event that historical or cultural artifacts are discovered at the Project site during construction or rehabilitation, the Contractor or contractor shall immediately stop construction and notify the local historical preservation officer and the state historic preservation officer at the Department of Archaeology and Historic Preservation at (360) 586-3065.

5. INSURANCE

A. Except as otherwise provided below in subsection B, the Contractor shall provide insurance coverage as set out in this section. The intent of the required insurance is to protect the State should there be any claims, suits, actions, costs, damages or expenses arising from any loss, or negligent or intentional act or omission of the Contractor or Subcontractor, or agents of either, while performing under the terms of this contract.

The insurance required shall be issued by an insurance company authorized to do business within the state of Washington. Except for Professional Liability or Errors and Omission Insurance, the insurance shall name the state of Washington, its agents, officers, and employees as additional insureds under the insurance policy. All policies shall be primary to any other valid and collectable insurance. The Contractor shall instruct the insurers to give COMMERCE thirty (30) calendar days advance notice of any insurance cancellation, non-renewal or modification.

The Contractor shall submit to COMMERCE within fifteen (15) calendar days of the Contract start date, a certificate of insurance which outlines the coverage and limits defined in this insurance section. During the term of the Contract, the Contractor shall submit renewal certificates not less than thirty (30) calendar days prior to expiration of each policy required under this section.

The Contractor shall provide insurance coverage that shall be maintained in full force and effect during the term of this Contract, as follows:

Commercial General Liability Insurance Policy. Provide a Commercial General Liability Insurance Policy, including contractual liability, written on an occurrence basis, in adequate quantity to protect against legal liability arising out of contract activity but no less than \$1,000,000 per occurrence. Additionally, the Contractor is responsible for ensuring that any Subcontractors provide adequate insurance coverage for the activities arising out of subcontracts.

Automobile Liability. In the event that performance pursuant to this Contract involves the use of vehicles owned or operated by the Contractor or its Subcontractor, automobile liability insurance shall be required. The minimum limit for automobile liability is \$1,000,000 per occurrence, using a Combined Single Limit for bodily injury and property damage.

Professional Liability, Errors and Omissions Insurance. The Contractor shall maintain Professional Liability or Errors and Omissions Insurance. The Contractor shall maintain minimum limits of no less than \$1,000,000 per occurrence to cover all activities by the Contractor and

**EXHIBIT 2 to Professional Services Agreement
MESA 2 Prototype – Additional Commerce Terms**

licensed staff employed or under contract to the Contractor. The state of Washington, its agents, officers, and employees need *not* be named as additional insured under this policy.

Fidelity Insurance. Every officer, director, employee, or agent who is authorized to act on behalf of the Contractor for the purpose of receiving or depositing funds into program accounts or issuing financial documents, checks, or other instruments of payment for program costs shall be insured to provide protection against loss:

1. The amount of fidelity coverage secured pursuant to this Contract shall be \$100,000 or the highest of planned reimbursement for the Contract period, whichever is lowest. Fidelity insurance secured pursuant to this paragraph shall name COMMERCE as beneficiary.
2. The Contractor shall provide, at COMMERCE's request, copies of insurance instruments or certifications from the insurance issuing agency. The copies of certifications shall show the insurance coverage, the designated beneficiary, who is covered, the amounts, the period of coverage, and that COMMERCE will be provided thirty (30) days advance written notice of cancellation.

B. With prior approval from COMMERCE, the Contractor may provide the coverage above under a self-insured liability pool or self-insured risk management program. In order to obtain permission from COMMERCE, the Contractor shall provide: (1) a description of its self-insurance program, and (2) a certificate and/or letter of coverage that outlines coverage limits and deductibles. All self-insured risk management programs or self-insured/liability pool financial reports must comply with Generally Accepted Accounting Principles (GAAP) and adhere to accounting standards promulgated by: (1) Governmental Accounting Standards Board (GASB), (2) Financial Accounting Standards Board (FASB) and (3) the Washington State Auditor's annual instructions for financial reporting. Contractor's participating in joint risk pools shall maintain sufficient documentation to support the aggregate claim liability information reported on the balance sheet. The state of Washington, its agents, and employees need not be named as additional insured under a self-insured property/liability pool, if the pool is prohibited from naming third parties as additional insured. Contractor shall provide annually to COMMERCE a summary of coverages and a letter of self-insurance, evidencing continued coverage under Contractor's self-insured/liability pool or self-insured risk management program. Such annual summary of coverage and letter of self-insurance will be provided on the anniversary of the start date of this Agreement.

GENERAL TERMS & CONDITIONS

5. AMERICANS WITH DISABILITIES ACT (ADA) OF 1990, PUBLIC LAW 101-336, also referred to as the "ADA" 28 CFR Part 35

The Contractor must comply with the ADA, which provides comprehensive civil rights protection to individuals with disabilities in the areas of employment, public accommodations, state and local government services, and telecommunications.

10. CODE REQUIREMENTS

All construction and rehabilitation projects must satisfy the requirements of applicable local, state, and federal building, mechanical, plumbing, fire, energy and barrier-free codes. Compliance with the Americans with Disabilities Act of 1990 28 C.F.R. Part 35 will be required, as specified by the local building Department.

11. CONFIDENTIALITY/SAFEGUARDING OF INFORMATION

A. "Confidential Information" as used in this section includes:

1. All material provided to the Contractor by Commerce that is designated as "confidential" by Commerce;
2. All material produced by the Contractor that is work product performed under this Contract or that is designated as "confidential" by Commerce except Use Case Data (as defined in the

EXHIBIT 2 to Professional Services Agreement
MESA 2 Prototype – Additional Commerce Terms

agreement between the District and Commerce); provided that any proprietary and confidential information of Contractor or subcontractors included in such Use Case Data shall be clearly marked as such and shall be protected from disclosure except to the extent otherwise required by law; and provided further that notification of any proposed disclosure required by law shall be provided to Contractor (and shall be provided by Contractor to any subcontractor who owns any portion of such information) in order to provide such party a reasonable opportunity to enjoin the disclosure of such information; and

3. All personal information in the possession of the Contractor that may not be disclosed under state or federal law.

B. The parties shall comply with all state and federal laws related to the use, sharing, transfer sale or disclosure of Confidential Information. The parties shall use Confidential Information solely for the purposes of this Contract and shall not use, share, transfer, sell or disclose any Confidential Information to any third party except with the prior written consent of the party claiming confidentiality or as may be required by law, except that Confidential Information may be disclosed to subcontractors and other agents of the Contractor on a need to know basis. The parties shall take all necessary steps to assure that Confidential Information is safeguarded to prevent unauthorized use, sharing, transfer, sale or disclosure of Confidential Information or violation of any state or federal laws related thereto. Upon request, the Contractor shall provide Commerce with its policies and procedures on confidentiality. Commerce may require changes to such policies and procedures as they apply to this Contract whenever COMMERCE reasonably determines that changes are necessary to prevent unauthorized disclosures. The Contractor shall make the changes within the time period specified by Commerce. Upon request, the Contractor shall immediately return to COMMERCE any Confidential Information that Commerce reasonably determines has not been adequately protected by the Contractor against unauthorized disclosure.

12. CONFORMANCE

If any provision of this contract violates any statute or rule of law of the state of Washington, it is considered modified to the extent necessary to conform to that statute or rule of law.

16. DUPLICATE PAYMENT

The Contractor certifies that work to be performed under this contract does not duplicate any work to be charged against any other contract, subcontract, or other source.

17. GOVERNING LAW AND VENUE

This Contract shall be construed and interpreted in accordance with the laws of the state of Washington, and the venue of any action brought against Commerce shall be in the Superior Court for Thurston County.

18. INDEMNIFICATION AND RELEASE

To the fullest extent permitted by law, the Contractor shall indemnify, defend, and hold harmless the state of Washington, COMMERCE, agencies of the state and all officials, agents and employees of the state, for, from and against all Claims for injuries or death arising out of or resulting from the performance of the contract. "Claim" as used in this contract, means any financial loss, claim, suit, action, damage, or expense, including but not limited to attorney's fees, attributable for bodily injury, sickness, disease, or death, or injury to or the destruction of tangible property including loss of use resulting therefrom.

The Contractor's obligation to indemnify, defend, and hold harmless includes any claim by Contractor's agents, employees, representatives, or any Subcontractor or its employees.

The Contractor agrees to indemnify, defend, and hold harmless the State for any claim arising out of or incident to the Contractor's or any Subcontractor's performance or failure to perform the Contract.

The Contractor waives its immunity under Title 51 RCW to the extent it is required to indemnify, defend and hold harmless the state and its agencies, officers, agents or employees.

EXHIBIT 2 to Professional Services Agreement
MESA 2 Prototype – Additional Commerce Terms

The Contractor agrees that Commerce and the State of Washington are not liable for claims or damages arising from the Contractor's performance of the Contract.

20. INDUSTRIAL INSURANCE COVERAGE

The Contractor shall comply with all applicable provisions of Title 51 RCW, Industrial Insurance. If the Contractor fails to provide industrial insurance coverage or fails to pay premiums or penalties on behalf of its employees as may be required by law, COMMERCE may collect from the Contractor the full amount payable to the Industrial Insurance Accident Fund. COMMERCE may deduct the amount owed by the Contractor to the accident fund from the amount payable to the Contractor by COMMERCE under this Contract, and transmit the deducted amount to the Department of Labor and Industries, (L&I) Division of Insurance Services. This provision does not waive any of L&I's rights to collect from the Contractor.

21. LAWS

The Contractor shall comply with all applicable laws, ordinances, codes, regulations and policies of local and state and federal governments, as now or hereafter amended.

22. LICENSING, ACCREDITATION AND REGISTRATION

The Contractor shall comply with all applicable local, state, and federal licensing, accreditation and registration requirements or standards necessary for the performance of this Contract.

24. NONCOMPLIANCE WITH NONDISCRIMINATION LAWS

During the performance of this Contract, the Contractor shall comply with all federal, state, and local nondiscrimination laws, regulations and policies. In the event of the Contractor's non-compliance or refusal to comply with any nondiscrimination law, regulation or policy, this contract may be rescinded, canceled or terminated in whole or in part, and the Contractor may be declared ineligible for further contracts with COMMERCE. The Contractor shall, however, be given a reasonable time in which to cure this noncompliance. Any dispute may be resolved in accordance with the "Disputes" procedure set forth below:

When a dispute arises between the parties regarding the Contractor's alleged lack of compliance with the nondiscrimination requirements set forth above and such dispute cannot be resolved by direct negotiation, either the Contractor or Commerce may request a dispute hearing with the Department of Commerce, who may designate a neutral person to decide the dispute. The request for a dispute hearing must:

- Be in writing;
- State the disputed issues
- State the relative positions of the parties;
- State the Contractor's name and address and reference Commerce Contract Number 15-92201-003; and
- Be mailed to the Director of Commerce and the Contractor's Contract Representative within three working days after the parties agree that they cannot resolve the dispute.

The respondent shall send a written answer to the requestor's statement to both the Director of Commerce or the Director's designee and the requestor within five working days. The Director or designee shall review the written statement and reply in writing to both parties within ten working days. The Director or designee may extend this period if necessary by notifying the parties. The decision shall not be admissible in any succeeding judicial or quasi-judicial proceeding. The parties agree that this dispute resolution process shall precede any action in a judicial or quasi-judicial tribunal. Nothing in this Section 24 shall be construed to limit the parties' choice of a mutually acceptable alternate dispute resolution (ADR) method in addition to the dispute hearing procedure outlined above.

EXHIBIT 2 to Professional Services Agreement
MESA 2 Prototype – Additional Commerce Terms

25. POLITICAL ACTIVITIES

Political activity of Contractor employees and officers are limited by the State Campaign Finances and Lobbying provisions of Chapter 42.17A RCW and the Federal Hatch Act, 5 USC 1501 - 1508.

No funds may be used for working for or against ballot measures or for or against the candidacy of any person for public office.

26. PREVAILING WAGE LAW

The Contractor certifies that, if applicable, all contractors and subcontractors performing work on the Project in the State of Washington shall comply with state Prevailing Wages on Public Works, Chapter 39.12 RCW, as applicable to the Project funded by this contract, including but not limited to the filing of the "Statement of Intent to Pay Prevailing Wages" and "Affidavit of Wages Paid" as required by RCW 39.12.040. The Contractor shall maintain records sufficient to evidence compliance with Chapter 39.12 RCW, and shall make such records available for COMMERCE's review upon request.

28. PUBLICITY

The Contractor agrees not to publish or use any advertising or publicity materials in which the state of Washington or COMMERCE's name is mentioned, or language used from which the connection with the state of Washington's or COMMERCE's name may reasonably be inferred or implied, without the prior written consent of COMMERCE. Upon the announcement of the Grant by COMMERCE, the District and COMMERCE will agree upon a short general description of the Grant, which will be updated from time to time as the Project progresses. Any descriptions of the Grant by Contractor or its Subcontractors must be consistent with the agreed-upon description.

30. RECORDS MAINTENANCE

The Contractor shall maintain books, records, documents, data and other evidence relating to this contract and performance of the services described herein, including but not limited to accounting procedures and practices that sufficiently and properly reflect all direct and indirect costs of any nature expended in the performance of this contract.

Contractor shall retain such records for a period of six years following the date of final payment. At no additional cost, these records, including materials generated under the contract, shall be subject at all reasonable times to inspection, review or audit by COMMERCE, personnel duly authorized by COMMERCE, the Office of the State Auditor, and federal and state officials so authorized by law, regulation or agreement.

If any litigation, claim or audit is started before the expiration of the six (6) year period, the records shall be retained until all litigation, claims, or audit findings involving the records have been finally resolved.

31. RIGHT OF INSPECTION

At no additional cost all records relating to the Contractor's performance under this Contract shall be subject at all reasonable times to inspection, review, and audit by COMMERCE, the Office of the State Auditor, and federal and state officials so authorized by law, in order to monitor and evaluate performance, compliance, and quality assurance under this Contract. The Contractor shall provide access to its facilities for this purpose.

33. SEVERABILITY

The provisions of this contract are intended to be severable. If any term or provision is illegal or invalid for any reason whatsoever, such illegality or invalidity shall not affect the validity of the remainder of the contract.

34. SUBCONTRACTORS

The Contractor may only subcontract work contemplated under this Contract if it obtains the prior written approval of the District (which shall be contingent upon receipt of written approval from

EXHIBIT 2 to Professional Services Agreement
MESA 2 Prototype – Additional Commerce Terms

Commerce) for every subcontractor that is not an Exempt Subcontractor (as defined in Article V. A. of the Contract). If Commerce approves subcontracting, the Contractor shall maintain written procedures related to subcontracting, as well as copies of all subcontracts and records related to subcontracts. For cause, Commerce in writing may: (a) require the Contractor to amend its subcontracting procedures as they relate to this Contract; (b) prohibit the Contractor from subcontracting with a particular person or entity; and (c) require the Contractor to rescind or amend a subcontract. The Contractor shall appropriately monitor the activities of the Subcontractor to assure fiscal conditions of this Contract.

Notwithstanding any other provision to the contrary, nothing in this Agreement, and no terms in any subcontractor agreement entered into after June 1, 2014, shall prohibit or restrict the District from performing its obligations to generate "Use Case Data" under the terms of its agreement with Commerce, and no amendment to any subcontract executed prior to June 1, 2014 will materially diminish the District's ability to comply with such obligations. Such obligations include, but are not limited to, the obligation to provide Pacific Northwest National Laboratories ("PNNL"), which is contracting separately with Commerce to define, measure and analyze certain use cases pertaining to the work funded under this Contract, with timely, reasonable access to the necessary facilities, personnel, and Use Case Data for purposes of PNNL's measuring and analyzing the performance of the Battery Energy Storage Systems being developed pursuant to this Contract during each use case testing period, all as more fully described in Section 6 of the Special Terms and Conditions of the agreement between the District and Commerce, a copy of which shall be provided to the Contractor upon request.

35. SURVIVAL

The terms, conditions, and warranties contained in this Contract that by their sense and context are intended to survive the completion of the performance, cancellation or termination of this Contract shall so survive.

36. TAXES

All payments accrued on account of payroll taxes, unemployment contributions, the Contractor's income or gross receipts, any other taxes, insurance or expenses for the Contractor or its staff shall be the sole responsibility of the Contractor.

37. WAIVER

Waiver of any default or breach shall not be deemed to be a waiver of any subsequent default or breach. Any waiver shall not be construed to be a modification of the terms of the agreement between the District and Commerce unless stated to be such in a writing and signed by an Authorized Representative of Commerce, as defined in such agreement.

SN2-ES-01 – Target Capabilities and Requirements

Attachment A , version 0.5

1 PURPOSE AND SCOPE

This document enumerates the target capabilities and requirements for the MESA 2 Energy Storage System (ESS). These capabilities and requirements have been specified by the Snohomish County PUD and must be met in order to satisfy the project's objectives. The information provided in this document will be used to verify and validate the ESS once it has been deployed.

1.1 REFERENCES

The documents listed in Table 1 are either explicitly or implicitly referenced herein.

Table 1. Related documentation

Document	Purpose
SN2-EG-01-- Glossary	Glossary of terms related to the Snohomish County PUD project at Everett Substation.

2 TARGET CAPABILITIES AND REQUIREMENTS

The ESS shall be designed and specified to meet the following covering the architectural, functional, system control and data interface, mechanical, regulatory, environmental, safety, security and service target capabilities and requirements.

2.1 MODULAR ENERGY STORAGE ARCHITECTURE (MESA)

As the name implies, the ESS will be built using the Modular Energy Storage Architecture (MESA) as a foundation. The MESA standard aspires to increase the level of modularity and interoperability in the energy storage industry, so that it is much easier and much less expensive to assemble an energy storage system from components sourced from multiple manufacturers. The MESA standard also aims to make it possible to cheaply and easily replace major components (e.g. the PCS or a bank of batteries) as new and/or better performing technology is developed.

Modularity is considered a requirement by the District. To deliver an energy storage system that meets all other project requirements but is not built using the modular principles on top of which MESA is built would be a failure. At the core MESA is focused on modularity in three areas: communications, electrical connectivity, and physical layout.

2.1.1 COMMUNICATIONS MODULARITY

Each of the major components within energy storage systems today provides some sort of communication mechanism so that the device can be monitored and controlled. Unfortunately the mechanism that is used in communicating with these devices varies from device type to device type, and from manufacturer to manufacturer. For example, batteries often make use of CAN bus, which is a vehicle bus standard. But some battery manufacturers also provide a Modbus interface, sometimes over a serial connection and sometimes over TCP/IP. PCS manufacturers, on the other hand, quite often will only provide a Modbus/TCP end point, but a system integrator needs to understand the specific setpoints on a given manufacturer's PCS in order to effectively monitor and control the device.

SN2-ES-01 – Target Capabilities and Requirements

Attachment A, version 0.6

The MESA standard defines a set of TCP-based interfaces which are targeted at clearing up all of this confusion. Each MESA-compatible device will need to provide a TCP-based endpoint, so that a single, ubiquitous networking technology (Ethernet + TCP) can be used to communicate with all of the devices in the ESS. Furthermore, MESA defines the attributes and methods that each device type must support, so that there is uniformity within a device class. These MESA innovations should make it possible for an energy storage control system to communicate with devices from various manufacturers without reengineering.

2.1.2 ELECTRICAL MODULARITY

Utilities such as the Snohomish County PUD want energy storage systems that will connect electrically in standard, well-understood ways. If the ESS is substation-sited, these utilities are typically looking for a standard 12.47 kVAC output voltage, provided through a step-up transformer that is part of the ESS. To minimize costs and ease integration, it is desirable to use a standard step-up transformer for this purpose, which generally implies a 60 Hz step-up transformer that converts between 480 VAC and 12.47 kVAC. This implies that the PCS should output a standard 480 V on the AC side. To ensure that the goal of 480 V is met, battery manufacturers should configure their batteries to meet DC minimum voltage requirements of the PCS manufacturers.

The MESA standard defines the AC output requirements of the PCS in addition to specifying configuration parameters which will let any battery manufacturer properly integrate with a PCS designed to output the standard AC voltage. Using this guidance, MESA compatible PCS's and battery systems should be electrically interchangeable allowing a greater array of PCS's to interoperate with a greater array of battery systems.

2.1.3 PHYSICAL MODULARITY

Many energy storage systems built today are built using a 20', 40' or 53' ISO shipping container. These rugged, durable, standardized containers are often filled with racking equipment, and the racks are then filled with batteries and control systems. In the case of flow batteries, the containers may contain large electrolyte enclosures and battery stacks.

2.2 FUNCTIONAL REQUIREMENTS

This section enumerates the functional requirements of the ESS.

2.2.1 ENERGY STORAGE – POWER AND ENERGY NAMEPLATE RATINGS

The installed energy storage system power and energy nameplate ratings shall meet the capabilities specified in Table 2 and Table 3 below.

Table 2. Energy Storage Discharge Capabilities

C Rate	Power	Energy
0.5	2.2 MW	4.4 MWh
0.25	1.6 MW	6.4 MWh
0.125	1 MW (avg.)	8 MWh

Table 3. Approximate Energy Storage Charge Capabilities

C Rate	Power	Energy
0.25	1.6 MW	6.4 MWh
0.125	1 MW (avg.)	8 MWh

SN2-ES-01 – Target Capabilities and Requirements

Attachment A , version 0.5

The real power capability of the ESS shall be at least 2.2 MW, consistent with the energy storage level and C rate requirements. The apparent power capability of the ESS shall be at least 2.2 MVA, consistent with the determined real power capability requirement. The reactive power capability of the ESS shall be at least 1.5 MVAR, dispatching both leading and lagging reactive power, regardless of whether the battery is being discharged or charged.

2.2.2 ENERGY STORAGE – RESPONSE TIME

The ESS shall initiate a response to a real or reactive charge or discharge command of up to the maximum available value within 100 ms of receiving the command.

2.2.3 ENERGY STORAGE – PROGRAMMED PROFILE

The ESS shall provide the capability of following a preprogrammed charge or discharge profile according to the following table:

Table 4. Programmed Profile Options

Schedule Granularity	Duration
15-minute	12.5 Hours
30 minute	25 hours
1 hour	50 hours

The schedule granularity shown in Table 4 above indicates the frequency that the operating mode can be modified or changed. The duration shown in Table 4 indicates the maximum duration of any programmed profile. The profile limit is 50 schedules.

2.2.4 VISIBLE DISCONNECT

The ESS shall incorporate a visible and lockable disconnect/connect between the PCS and the step-up transformer. The ESS shall also incorporate a visible and lockable disconnect/connect between the PCS and the battery containers.

2.2.5 POINT OF COMMON COUPLING ("PCC")

The PCC shall be the electrical connection of the ESS to the Everett Substation switchgear 12.47kV breaker. The step-up transformer shall be configured as wye on the high side (12.47kV) and delta on the low side.

2.2.6 PRODUCT LIFE

The ESS should be designed for a functional life of at least 20 years. Certain components may be replaced at intervals less than 20 years such as fans.

2.2.7 OPERATING POWER

The ESS shall utilize the grid power as the sole source of power. The grid connection to the ESS will be a single point connection at approximately 12.47kV. This requirement does not exclude the auxiliary power outlined in Section 2.2.13.

SN2-ES-01 – Target Capabilities and Requirements

Attachment A, version 0.5

2.2.8 AUTONOMOUS OPERATION

The ESS shall be capable of completely automatic, unattended operation, including self-protection, synchronizing and paralleling with the utility, and disconnect.

2.2.9 STARTUP FROM AN ALARM CONDITION

In case of an alarm condition where the ESS shuts down, the ESS shall remain in a shutdown state until a reset signal, either local or remote, is initiated.

2.2.10 ANCILLARY EQUIPMENT CONTROLS

The ESS shall provide for the automatic operation of fans, HVAC, and similar ancillary equipment.

2.2.11 ISLANDING—DISCONNECT

The ESS shall disconnect its output within 2 seconds from the grid, in conditions where the grid voltage or frequency are no longer present or insufficiently low or high at the PCC. The voltage and frequency thresholds for disconnect shall be programmable.

In addition, the ESS shall not start up in the condition where the grid voltage or frequency are not present or insufficiently low or high at the PCC.

2.2.12 INDEPENDENT POWER

The ESS is not required to operate in the absence of grid power, but shall safely shutdown and indicate state.

2.2.13 AUXILIARY POWER

The ESS shall have a 120 Vac power source from the District's Everett Substation to power auxiliary equipment. Examples of auxiliary equipment include control systems, network switches, UPS, and supplementary metering and relay equipment.

2.2.14 UNINTERRUPTABLE POWER SUPPLY ("UPS")

The ESS should have a UPS for auxiliary equipment necessary for the safe shutdown requirement of Section 2.8.2.

2.2.15 POWER CONVERSION SYSTEM ("PCS")

The PCS(s) shall be a static device (non-rotational) using solid-state electronic switch arrays in a self-commutated circuit topology.

2.2.16 RECORDED DATA

The ESS shall record the monitored and/or displayed data identified herein for a period of at least 30 days at an interval no shorter than 1 second and no longer than 2 seconds. The ESS should be capable of storing data at intervals shorter than 1 second, but voids the 30 day retention period (i.e. during performance testing over a single day requiring more granular data display).

SN2-ES-01 – Target Capabilities and Requirements

Attachment A, version 0.5

Recorded data can be regularly uploaded to an alternate location of the District's choosing. 1Energy will work with the District to configure this automatic upload, but will not provide hardware infrastructure (e.g. digital storage) to support this feature.

2.2.17 CONTROL COMPUTER

Control computers shall be substation hardened per IEEE standard 1613, microprocessor-based using standard operating systems.

2.3 SYSTEM CONTROL AND DATA INTERFACE

This section lists the ESS control and data interface requirements.

2.3.1 TIME STAMPING

The control system shall accept Network Time Protocol (NTP) or IRIG-B. Control and protection functions shall be time synchronized using IRIG B.

2.3.2 CONTROL PANEL—AC CIRCUIT BREAKER

The ESS control panel shall provide a means to trip/reset the AC circuit breaker

2.3.3 CONTROL PANEL—DC CONTACTORS

The ESS control panel shall provide means to trip/reset the DC contactors

2.3.4 CONTROL PANEL—PCS POWER ON/OFF

The ESS control panel shall provide means to turn the PCS on and off

2.3.5 CONTROL PANEL—SYSTEM RESET

The ESS control panel shall include means for resetting the full system to a known/default state.

2.3.6 CONTROL PANEL—RESET CUTOFF SELECTOR

The ESS control panel shall provide means to disable remote or local reset signals.

2.3.7 CONTROL PANEL—OPERATING STATE

The ESS control panel shall provide means to manually select the operating state.

2.3.8 CONTROL PANEL—OPERATING MODE

The ESS control panel shall provide means to manually set the operating mode.

SN2-ES-01 – Target Capabilities and Requirements
Attachment A , version 0.5

2.3.9 CONTROL PANEL—ACCESSIBILITY

The ESS control panel should be easily accessible via a locked enclosure.

2.3.10 CONTROL PANEL—DISPLAYED INFORMATION

The ESS control interface shall display and make available via DNP3 communication all the values listed in Table 5.

Table 5. Monitored, displayed, and transmitted data

Value	Description	Units
Frequency	The present AC line frequency at the connection point	Hz
AC Real Power	The present AC active power level at the connection point	Watts
AC Reactive Power	The present AC reactive power level at the connection point	Vars
Power Factor	The present power factor at the connection point	None
Real Energy Delivered	The cumulative Watt-hours delivered to the grid	Watt-hours
Real Energy Received	The cumulative Watt-hours received from the grid	Watt-hours
Reactive Energy Delivered	The cumulative VAR-hours delivered to the grid	VAR-hours
Reactive Energy Received	The cumulative VAR-hours received from the grid	VAR-hours
Auxiliary Power Voltage	The present AC voltage	Volts AC
Auxiliary Power	The present AC active power level of auxiliary equipment	Watts
Auxiliary Energy	The cumulative Watt-hours consumed by auxiliary equipment	Watt-hours
DC Power	The present DC power at the inverter input	Watts
DC Voltage	The present DC voltage at the inverter input	Volts
DC Current	The present DC current at the inverter input	Amps
Phase A Voltage	The AC rms voltage of phase A at the connection point	Volts rms
Phase A Angle	The phase angle of the phase A voltage at the connection point	degrees
Phase B Voltage	The AC rms voltage of phase B at the connection point	Volts rms
Phase B Angle	The phase angle of the phase B voltage at the connection point	degrees
Phase C Voltage	The AC rms voltage of phase C at the connection point	Volts rms
Phase C Angle	The phase angle of the phase C voltage at the connection point	degrees
Battery SOC	The present state of charge of the battery	% or kWh
Battery DOD	The present depth of discharge of the battery	% or kWh
Battery String currents	Separate current reporting for multiple strings	Amps
Battery temperature	Composed of a suitable average of temperatures at sufficient points inside the battery module to adequately represent the overall average temperature	Degrees F
Flow or Level	Flow Rate or Level of Electrolyte	LPM or %

Note that the specific way in which these values are displayed in the control interface is subject to implementation and further testing. For example, if testing indicates that it is more valuable to show Battery SOC as an energy value vs. a percentage of nameplate capacity, the control interface will be updated accordingly.

SN2-ES-01 – Target Capabilities and Requirements
Attachment A , version 0.5

2.3.11 REMOTE DATA ACCESS—SYSTEM PERFORMANCE VALUES

Upon request, the ESS shall transmit the performance values per Table 5.

2.3.12 ACCESS LEVEL—VIEW ONLY

Remote and local access to the ESS via a level I password shall have view only privileges.

2.3.13 ACCESS LEVEL—CONTROL AND VIEW

Remote and local access to the ESS via a level II password shall have full control and settings change privileges as well as view privileges.

2.3.14 ACCESS LEVEL—SCADA

Access to the ESS via SCADA shall provide the user with control and data access privileges via DNP3 per the following list:

- Control
 - Trip/reset the ac circuit breakers
 - Reset the control system
 - Set the operating state
 - Set operating mode
- Data Access
 - Status
 - Alarms
 - Event monitoring data
 - Selected performance values

2.3.15 RESETTING OF ALARMS

The ESS shall provide remote and local means for resetting ESS alarms.

2.3.16 REMOTE DATA ACCESS—EVENT MONITOR

Upon request, the ESS shall transmit the ESS event monitor information per Table 6.

Table 6. ESS event monitor

Event Name	Description	Local display
Start / Stop Operation	Events mark the starting and stopping of the ESS	
Internal Battery Alarm	Events mark the starting and stopping of battery voltages exceeding normal ranges	
DC Voltage Alarm	Events mark the starting and stopping of low or high battery voltage events	
Main Temperature Alarm	Events mark the beginning and end of ESS temperature exceeding a predetermined threshold	Y

SN2-ES-01 – Target Capabilities and Requirements
Attachment A , version 0.5

Event Name	Description	Local display
Smoke/Fire	Events mark the beginning and end of ESS detection of smoke/fire	Y
DC Leakage Current	Events mark the beginning and end of battery leakage current to ground exceeding a predetermined threshold	Y
Breaker Status	The status of the connect/disconnect switch. Events mark the opening and closing of the switch	Y
Grid Voltage OK	Events mark the beginning and end of System AC voltage exceeding a predetermined threshold	Y
Battery Temperature Alarm	Events mark the beginning and end of battery temperature exceeding a predetermined threshold	Y
Synchronization Error Shutdown	Events mark the beginning and end of battery temperature exceeding a predetermined threshold	Y
PCS Fault	Marks a fault within the PCS	Y
AC System Fault	Marks a fault within the AC system	Y
Control Logic Problem	Marks a problem with the ESS control logic	Y
DC Fuse Blown	Marks the detection of a blown fuse in the DC connection	Y
Container Door Open	Events mark the beginning and end of container door opening	Y
Leak Alarm	Events mark the beginning and end of electrolyte level dropping below predetermined threshold	Y

2.4 MECHANICAL

This section describes the physical requirements of the ESS.

2.4.1 INSTALLATION

The ESS shall be installed at the existing District Everett Substation.

2.4.2 DIMENSIONAL LIMITS

The ESS layout shall be designed to minimize the total footprint inside the Everett Substation. The ESS shall not impede access of the District's vehicles to substation equipment.

2.4.3 WIRING (INTERNAL)

Wires shall be 600 volt Type SIS stranded copper, suitable for operation at 90° C, arranged in tied wire bundles or run in wire duct. Splices shall not be used. Wire labels shall be provided at both ends of all internal wires showing wire numbers only. Wire destinations shall not be indicated on the wire labels. The labels shall be machine-embossed black lettering on white heat-shrink sleeves. Wire numbers shall be as shown on the Contract Drawings.

All control wiring shall be No. 12 AWG or larger as required unless specified otherwise.

SN2-ES-01 – Target Capabilities and Requirements

Attachment A , version 0.5

Terminal blocks shall have straps with washer-head binding screws, and shall be one-piece with bases and barriers molded integrally with brass inserts rated for not less than 600 volts. Screws shall be single-slot. No Phillips head or combination screws shall be accepted. The terminal blocks shall accommodate up to No. 8 AWG wire and shall contain a marking strip. Spare terminals equal in number to 20% of the total number of terminals to be wired shall also be furnished. Terminal blocks shall be mounted on vertical surfaces only.

Terminal blocks for current transformers shall be equipped with devices for short-circuiting the secondary to permit removing and testing of wiring without opening of the transformer circuits. Removal of the outgoing conductors shall not affect the short-circuiting device. Wire jumpers used to form delta connections shall be on the device side of the terminal block – not on the CT side. Screws shall be single-slot. No Phillips head or combination screws shall be accepted.

Not more than two wire terminations shall be made on any device or terminal block point.

Adhesive type wire bundle hold-down clamps shall not be used. All hold-downs shall be bolted or welded. Velcro shall not be used to secure wires, with the exception of data network cables.

2.4.4 DATA NETWORK CABLES

Category 5e cable shall be Belden Product 7918A or equal, four pair No. 24 AWG solid copper conductor with blue color jacket.

Category 5e cables shall be terminated with RJ-45 connectors using the T568B pin/pair assignment configuration.

Cables shall not be sharply bent, pinched, or tightly clamped. Tie wraps shall not be used. Data network cables shall be secured without pinching, using such methods as Velcro or spiral wrap. Cable manufacturer's minimum bend radius and other requirements shall be met. There shall be no visible indentations on the cable jacket caused by wire ties or other cable securing devices. There shall be no nicks on the solid wire.

Data network cables shall be separated from control and power wiring in raceways as follows:

Duct and conduit systems – cables shall be run in a separate conduit.

Trays and wire ways – cables shall be separated from control and power wires energized at voltages greater than 240 VAC with a barrier. Data cables may be run with, but grouped separately from, control and power cables with voltages of 240 VAC or less.

2.4.5 ENCLOSURE INTEGRITY

The ESS shall be rodent-proof and completely weatherproof against all elements of weather. Joining surfaces shall be sealed with waterproof non-hardening compound and/or gaskets. Doors and access cover plates shall be provided with gaskets and suitably fitted to ensure a weather tight structure against blowing rain.

Grounding pads shall be provided on the four corners of the battery container and PCS base. Each ground pad shall be stainless steel or copper faced steel tapped for two (2) 1/2" - 13 bolts spaced at 1 - 3/4 inches. Minimum thread depth shall be 1/2 inch.

Emergency lighting shall be used for exit lighting during a power failure. The emergency lighting fixture(s) are to commercial grade and shall have integral backup chargeable batteries.

Safety signs applied to the battery container and PCS shall use signal words, symbols, and wording as required in the latest revision of ANSI Z535.

SN2-ES-01 – Target Capabilities and Requirements
Attachment A, version 0.5

Weather-stripped entrance doors shall be provided with inside hinges, Von Duprin Series 88 Inside panic-bar release, outside door handle and door-stop. The door closers shall have provision for latching the door in the fully open position. The outside door handle shall be a lever with escutcheon, made by Best Lock Corporation. Best 6-pin key cylinders shall be provided in both doors. The District will provide and install the key cores upon arrival of the ESS.

The enclosure for meters and relay equipment shall comply with the Enclosure Type 3 or 4 standard of the National Electrical Manufacturers Association (NEMA). Additionally there must be provision for heating and ventilation of the enclosure to prevent condensation and to ensure the equipment inside is maintained within its operating parameters for the ambient temperature range indicated in this document. The PCS and battery container enclosures shall be painted the color ANSI 70 gray, consistent with the District's substation equipment. The paint shall not contain lead or other environmentally hazardous chemicals such as chromium.

2.4.6 MANUFACTURER LOGOS ON EQUIPMENT

Each vendor or manufacturer logo on ESS equipment shall be no larger than four (4) square feet. Multiple logos may be present on equipment, however each logo must be sized to meet this requirement. For example, dimensions may be 2' x 2' or 1' x 4.'

2.4.7 RELAY REDUNDANCY

The ESS shall have protection for all types of electrical faults as deemed necessary by the District.

2.5 REGULATORY

2.5.1 REQUIRED STANDARDS

The ESS shall be designed to and verified to comply with the standards shown in Table 7:

Table 7. Regulatory standards

Number	Title
IEEE 693	Seismic design of substations
IEEE 1547-2003(R2008) TM	IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems (except for voltage regulation, VAR control, and unintentional islanding portion of standard, Section 4.4.1)
IEEE 1547.1-2005 TM	Standard For Conformance Test Procedures for Equipment Interconnecting Distributed Resources With Electric Power Systems (except for unintentional islanding portion of standard, Section 5.7 and 5.8)
IEEE 519 TM 1992	IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems
UL 1778	Underwriters Laboratory's Standard for Uninterruptible Power Systems (UPS) for up to 600V A.C.
IEEE C62.41-1991(R1995) TM	IEEE Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits
IEEE C62.41.1-2002 TM	IEEE Guide on the Surges Environment in Low-Voltage (1000V and Less) AC Power Circuits

SN2-ES-01 – Target Capabilities and Requirements
Attachment A , version 0.5

Number	Title
IEEE C62.41.2-2002 TM	IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and Less) AC Power Circuits
IEEE 1584-2002 TM	IEEE Guide for Arc Flash Hazard Calculations
ANSI/IEEE C2-2007	National Electrical Safety Code
ANSI/IEEE Z535-2002	Product Safety Signs and Labels
NFPA 704	Standard System for the Identification of the Hazards of Materials for Emergency Response
NFPA & Local Regulations	Fire Suppression, etc.
NFPA 70E, Chapter 3, Article 320	Standard for Electrical Safety in the Workplace – Safety Requirements Related to Batteries and Battery Rooms
IEEE 386-2006	IEEE Standard for Separable Insulated Connector Systems for Power Distribution Systems Above 600V
IEEE C57.12.01-2005 TM	IEEE Standard General Requirements for Dry-Type Distribution and Power Transformers
ANSI/IEEE C57.12.28-2005	Pad-Mounted Equipment Enclosure Integrity
IEEE 1613	Environmental and Testing Requirements for Communications Networking Devices in Electric Power Substations
MESA-Device & MESA-ESS Protocols	Component and System Communication Standards

2.5.2 RECOMMENDED STANDARDS

The ESS should be designed to and verified to comply with the standards listed in Table 8.

Table 8. Recommended design standards

Number	Title
IEEE 979	Substation fire protection
IEEE C37.90 TM	IEEE Standard for Relays and Relay Systems Associated with Electrical Power Apparatus
IEEE C37.90.1-2002 TM	IEEE Standard for Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems (ANSI)
IEEE C37.90.2-2004 TM	IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers
IEEE C62.45-2002 TM	IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and Less) AC Power Circuits
IEEE 1815-2012 TM	IEEE Standard for Electric Power Systems Communications-Distributed Network Protocol (DNP3)
FCC 15.109 & 15.209	Electromagnetic compatibility

SN2-ES-01 – Target Capabilities and Requirements

Attachment A, version 0.5

2.5.3 LABELING

The ESS labeling shall be highly visible, no smaller than 14 pt. font in uppercase sans serif typeface, to identify major equipment and associated components or protection. For example, a battery string BMS shall be labeled "String A BMS" to associate it with the appropriate string of batteries to allow effective and safe disconnection.

2.6 ENVIRONMENTAL

This section defines the environmental conditions within which the ESS shall operate.

2.6.1 TEMPERATURE

The ESS shall operate within the ambient temperature range of -30 deg C to 40 deg C.

2.6.2 HUMIDITY

The ESS shall operate with a relative humidity of 95%.

2.6.3 AUDIBLE NOISE

The ESS shall not exhibit an audible noise level in excess of 64 dBA, with all equipment in operation (e.g. transformers, cooling, etc.). Testing and measurement shall be in accordance with the latest revision of IEEE standard C57.12.90.

2.6.4 SEISMIC

The ESS and all accessories shall be designed and constructed to withstand High Seismic Qualification in accordance with the latest revision of IEEE Standard 693, and shall be designed to meet the IBC 2009 for the site specific area of Everett, Washington, in seismic zone 3.

In addition, the ESS shall include means to restrain battery cell movement during seismic events.

2.6.5 ELECTROMAGNETIC COMPATIBILITY

The ESS should be designed and implemented in a manner that minimizes the risk that surrounding equipment will be adversely affected by the ESS's radiated and conducted emissions (reference recommended FCC standard(s) in Table 6).

2.7 SECURITY

This section outlines the security aspects of the ESS.

2.7.1 ALARM—HAZARDOUS POWER ACCESS

The ESS shall enter an alarm state and shutdown when the battery container access door or an access port/panel/door is opened to hazardous voltages and/or currents.

SN2-ES-01 – Target Capabilities and Requirements
Attachment A, version 0.5

2.7.2 PHYSICAL ACCESS—EXTERNAL LOCKS

The ESS shall incorporate external lock capability for gaining access to inside of containers or to all hazardous voltages and/or currents.

2.7.3 CYBERSECURITY

The ESS shall conform to the latest signed version of the District's Directive 99- District Information Security. The ESS manufacture will utilize industry best practices to protect the ESS from all cyber security threats.

2.8 SAFETY

2.8.1 INTERLOCK SWITCHES—HAZARDOUS POWER

Interlock switches that create a safe environment shall be provided on all access ports to hazardous voltages and or currents. The ESS shall go into an alarm state and shutdown when one of these ports is opened.

2.8.2 SAFE SHUT-DOWN

The ESS shall be able to shut down safely in all conditions (programmed, loss of grid power, etc.)

2.8.3 BATTERY LEAKAGE CURRENTS

The battery system may be ungrounded, however, the battery system shall include means to detect and alarm on excessive ground leakage currents.

2.8.4 GROUNDING

All metal structural components shall be earth grounded. For instance, all racks and metallic conductive members of stackable battery modules shall be grounded to earth.

Grounding pads shall be provided near the four corners of the components. Each ground pad shall be stainless steel or copper faced steel tapped for two (2) 1/2" - 13 bolts spaced at 1 - 3/4 inches. Minimum thread depth shall be 1/2 inch.

2.8.5 GROUND FAULT DETECTION

The ESS shall provide means for ground fault detection and enable appropriate alarm(s) in a ground fault condition.

2.8.6 HAZARD INDICATOR

The ESS shall include a visible indicator on the battery container to inform the local user that the contents of the container are active and in a hazardous state (e.g. LED indicator).

2.8.7 SECONDARY SPILL CONTAINMENT

The ESS shall include provisions for the electrolyte to be contained within the battery container in the event of a spill. Additionally, there shall be detection and alarming for electrolyte leaks.

2.8.8 COMMUNICATING SAFETY STATUS

The ESS will communicate all safety related conditions to ECC.

2.9 SERVICE

2.9.1 BATTERY

The ESS shall identify faulty battery module(s) and provide remote and local indication of the specific faulty module(s).

2.9.2 AIR FILTRATION

Air handling systems shall include filtering which is adequate to keep dust from the interior of the ESS. Replacement of filters shall not require special tools or involve more than two hours of labor.

2.9.3 COOLING LEAKS

The ESS shall provide means for detecting coolant (and electrolyte if applicable) leaks and, if necessary for equipment or personnel safety, shutting down the ESS in the event of a leak.

2.9.4 COMPONENT FAILURES

The ESS shall include all necessary self-protective features and self-diagnostic features to protect itself from damage in the event of component failure or the excursion of operating parameters beyond a safe or expected range. This includes excursions due to internal or external causes. The self-protective features shall prevent the ESS from being operated in a manner that may be unsafe or damaging. Faults due to malfunctions within the PCS, including commutation failures, shall be cleared by the PCS overcurrent protection device(s).

2.9.5 POWER DISCONNECT

The ESS shall include provisions for disconnect on both PCS ac and dc terminals, for maintenance work. Conductor separation must be clearly visible; flags or indicators are not acceptable on the ac side of the PCS. These disconnects shall be capable of being locked open (or made safe by a functionally equivalent procedure) for maintenance work. PCS capacitors with stored energies greater than 50 joules shall be flagged and jumpers must be furnished to discharge them prior to maintenance work. This procedure shall be addressed in the operations and maintenance manual.

2.9.6 REFRIGERANT SERVICEABILITY

The ESS shall not require respiratory equipment or emergency eye wash stations in the near vicinity for servicing components containing refrigerants.

SN2-ES-01 – Target Capabilities and Requirements
Attachment A , version 0.5

3 UNIBATTERY TECHNOLOGIES (UET) RESPONSIBILITIES

3.1 ISO

The ESS manufacture will be ISO 9001:2008 certified. If this certification is not available the manufacture will provide sufficient documentation that their manufacturing process adheres to the critical areas addressed in the ISO certification.

3.2 WARRANTY PERIOD

UET shall provide its standard warranty, but not less than (1) year required for the entire system.

3.3 PERFORMANCE SPECIFICATIONS

Table 9. Specifications for UET 2.2MW_{AC}; 8MWh_{AC} Uni.System

Parameter	Value
Nameplate and Peak Power, AC	2.2 MW, 2.4 MW
Maximum Energy, AC*	8.0 MWh
Rated Power:Discharge Duration, AC*	2.2 MW:continuous cycling, 2.2MW:2 hr, 1.6 MW:4 hr, 1 MW(ave):8 hr
Efficiency	65-70%, AC round trip at the inverter
Self-Discharge	<2%, in standby mode
Cycle Life	Unlimited cycles within system design life
System Design Life	20 years
DC Voltage Range	465 V-1,000 V DC
AC Voltage Output	Medium Voltage (4,160 V – 34.5 kV)
Standards Compliance Includes	IEEE 519, IEEE 1547 available
Ambient Temperature	-40°C to 50°C, active cooling for extended operation >35°C
System Footprint	4,360 ft ² (single container layer, 2 rows of 10 containers w/front doors facing each other and 13' aisle between)
Availability	96%, no stripping etc. required

*for 20' containers. Higher energy capability options available using 30' and 40' containers.

UET is providing all of the hardware and equipment necessary to meet these performance specifications and the requirements of this Attachment A, except the following:

- Control cabinet (includes 1Energy Intelligent Controller™ and related hardware)
- AC power and ground cabling external to containers
- Network cabling external to containers

MESA 2 Appliance Prototype – Architectural Description

Attachment B, version 3

MESA 2 ARCHITECTURAL DESCRIPTION

The MESA 2 Appliance prototype will include the components described and shown below (color coding indicates different suppliers).

1.1 SYSTEM COMPONENTS

Power conversion systems (PCSeS):

- Power conversion systems (PCSeS) – Real and reactive power capabilities as specified in “SN2-ES-01 – Energy Storage System Target Capabilities and Requirements” (also known as Attachment A).
- Hardware and software to manage the PCSeS and communicate with other Appliance components

Energy Storage Units (ESUs):

- Modular energy storage units (ESUs) based on UET advanced vanadium redox flow batteries, as specified in “SN2-ES-01 – Energy Storage System Target Capabilities and Requirements.”
- Hardware and software to manage the ESUs (including a battery management system, or BMS) and communicate with other Appliance components.

Balance-of-system (BOS):

- Additional components required to physically and electrically connect the MESA 2 with the District distribution system, including battery containers, temperature control, switching, step-up transformer interconnection of ESUs, and interconnection of the PCS to the step-up transformer.

System Software:

- 1Energy Intelligent Controller (1E-IC) software and 1E HMI for charging or discharging the ESS, and monitoring and managing PCS, ESUs and BOS components.
- Communications between the MESA 2 and outside world, including the District I/T environment.

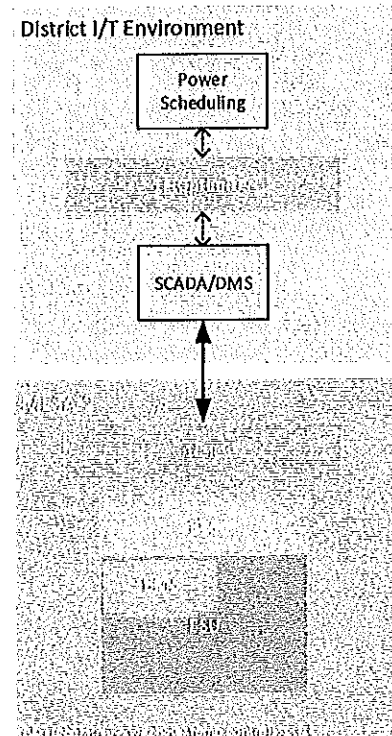


Figure 1

1.2 ELECTRICAL ARCHITECTURE

The attached UET one-line diagram depicts electrical internals of the MESA 2 and electrical connections between the Appliance and District's Everett Substation equipment.

UET 2MW Uni.System™ AC battery including the following subsystem components:

- Four battery banks each including:
 - 600kVA AEG PCS
 - 600KVA 480V (or 12kV) – 283V isolation transformer

MESA 2 Appliance Prototype – Architectural Description

Attachment B, version 3

- Bank DC visible disconnect switch
- Bank DC contactor
- Bank DC molded case CB
- Four battery container strings totaling a maximum energy of 2.2 MWh
 - String DC contactors
 - String – String DC contactors
- 112.5 kVA 283V – 480V auxiliary power transformer
- Auxiliary power fused disconnect switch
- 480V Distribution Panel
- Auxiliary power metering
- Battery power metering
- DC and AC side visible break disconnect switches

AC interconnection (power conversion to grid):

- Four 600kVA, 480 to 12kV step-up transformers (possibly included in PCS container above)
- Delta-wye connection
- Interconnection to substation switchgear feeder breaker via an S&C Vista® switch (provided by the District) and cabling system.

1.3 COMMUNICATIONS ARCHITECTURE

The communications diagrams below depicts communications internals of the MESA 2 Appliance prototype and communications between the Appliance and District I/T environment.

Control Systems:

- 1Energy Intelligent Controller (1E-IC)
- 1Energy HMI

Networks:

- Operation network switch/router w/ firewall
- Operational communications: Ethernet over fiber, DNP3
- Direct Transfer Trip: Serial, Mirrored Bits [If determined by the District's substation protection dept.]
- Non-operation network switch/router w/ firewall
- Non-operational communications: Serial over fiber
- Internal network switch
- VPN IDS

String Enclosures (x4):

- Maintenance HMI
- UET BMS
- PCS

Utility Control and Scheduling

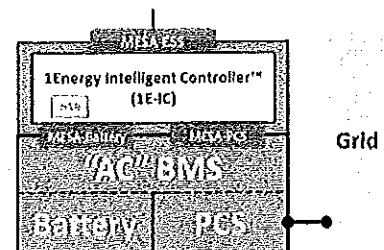


Figure 2

Utility Control and Scheduling

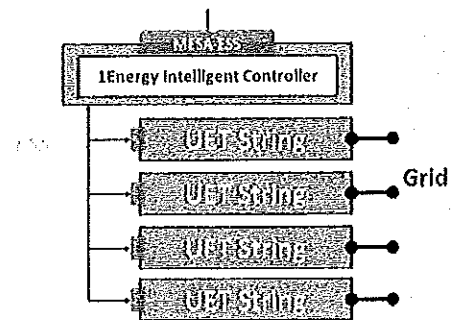


Figure 3

MESA 2 Appliance Prototype – Architectural Description

Attachment B, version 3

- Pump VFDs
- Cell Voltage Monitors
- Sensor I/O

2. CONTROL FUNCTIONS

The ESS supports the necessary functions and operating modes and corresponding Use Case scenarios. To the extent possible, all ESS control functions and operating modes shall be in accordance with standard functionalities for smart distributed resources as documented in the IEC 61850-90-7. This standard, a part of the 61850 suite, describes standard functions and control modes for distributed energy resources.

The communication protocol for the ESS shall be according to the IEEE 1815-2010, Standard for Electric Power Communications -- Distributed Network Protocol (DNP3), as further developed in DNP3 Application Note AN2011-001, DNP3 Profile for Basic Photovoltaic Generation and Storage. This Application Note is a protocol-mapping of many of the 61850-90-7 functions. It provides specific communication details for managing each addressed function.

2.1 DIRECT CHARGE/DISCHARGE MANAGEMENT MODE

This mode of operation involves the ESS responding to signals received from a remote entity to manage its charging and discharging. This function is identified in the IEC 61850-90-7 standard, and its usage is described in detail in the DNP3 AN2011-001, Section 2.3.6. This mode of operation can be used for a variety of purposes, including:

- **General Energy Arbitrage:** The charge/discharge signals may be such that energy is stored in the ESS when prices are low and discharged when prices are high, in order to provide an economic benefit.
- **Peak Limiting:** Direct charge/discharge signals may be such that energy dispatched from the ESS prevents the power level at a point of reference from exceeding a certain threshold. In this case, the peak limiting logic resides in whatever system is generating the direct charge/discharge signals. Note that there is also a self-managed "peak limiting" mode described below in which the ESS contains the function logic.
- **Load/Generation Following:** Direct charge/discharge signals may be such that energy dispatched from the ESS tracks a certain reference measurement (either load or generation). The load being followed could be local or remote. In this case, the load/generation following logic resides in whatever system is generating the direct charge/discharge signals. Note that there is also a self-managed "load/generation following" mode described below in which the ESS contains the function logic.

2.2 SCHEDULED CHARGE/DISCHARGE MANAGEMENT MODE

This mode of operation is similar to the Direct Charge/Discharge Mode described in Section 2.1, but utilizes a schedule for the charge/discharge levels. This function's usage is described in detail in the DNP3 AN2011-001, Section 2.3.13.

Scheduling of charge/discharge settings allows for less frequent communication between the ESS and remote and/or central applications. As defined in the DNP3 specification, schedules may repeat (daily, weekly, etc.) allowing the ESS to continue to operate actively during periods of loss of communication.

MESA 2 Appliance Prototype – Architectural Description

Attachment B, version 3

2.3 POWER FACTOR LIMITING MODE

The ESS supports an autonomous power factor limiting mode that allows it, once configured, to autonomously generate or absorb VAR's to hold the power factor constant at a monitored point of reference on the District's system. The control set point sent to the ESS from the District control system shall have units of VARs.

2.4 CONSTANT POWER FACTOR MODE

An alternative mechanism to manage the VAR generation of the ESS is to set a constant power factor (VARs proportional to Watts). This mode is supported in the ESS in accordance with to the IEC 61850-90-7 standard with usage described in detail in DNP3 AN2011-001, Section 2.3.5.

2.5 PEAK LIMITING MODE

The ESS supports an autonomous peak-limiting mode that allows it, once configured, to autonomously operate to limit the power level at a monitored point of reference. The behavior of this function is described in detail in EPRI report number 1023059. It was not included in the present versions of the IEC 61850-90-7 or DNP3 AN2011-001, but is anticipated to be incorporated by these groups into the next revision of these standards.

2.6 POWER SMOOTHING MODE

The ESS supports an autonomous power smoothing function that allows it, once configured, to dynamically produce/absorb real power (Watts) in order to compensate for fast changes in the power level of a remotely monitored reference point. This function differs from load/generation following described previously in that the response is driven by changes in the monitored signal rather than its absolute value. It also differs in that the response produced by this function is temporary, returning to zero whenever the reference signal is stable at any level.

The behavior of this function is described in detail in EPRI report number 1023059. It was not included in the present versions of the IEC 61850-90-7 or DNP3 AN2011-001, but is anticipated to be adopted by these groups into the next revision of these standards.

2.7 LOAD/GENERATION FOLLOWING MODE

The ESS supports an autonomous load/generation following mode that allows it, once configured, to autonomously operate to follow the load/generation level at a monitored point of reference. The behavior of this function is described in detail in EPRI report number 1023059. It was not included in the present versions of the IEC 61850-90-7 or DNP3 AN2011-001, but is anticipated to be adopted by these groups into the next revision of these standards.

3 ALIGNMENT WITH CLEAN ENERGY FUND

The ESS shall support use cases as identified in Attachment C (Use Case Matrix) and Attachment D (Use Case Catalogue v11.2) of the Capital Grant Agreement between the District and Department of Commerce. MESA 2 ESS architecture will support all data and information required to meet the conditions in the Clean Energy Fund Agreement.

MESA 2 Appliance Prototype - Snohomish County PUD Deliverables Attachment C, version 4

1 PURPOSE AND SCOPE

This document serves as the documentation of deliverables to be provided to the MESA 2 project by Snohomish County Public Utility District No. 1 ("District"). This document supports the creation of a contract between 1Energy Systems and District.

2 RELATED DOCUMENTATION

The documents listed in Table 1 are either explicitly or implicitly referenced herein.

Table 1: Related documentation

Number	Name/Description
Table to be filled out during Project Design and Project Planning phase	

3 SNOHOMISH PUD DELIVERABLES

3.1 PHYSICAL

3.1.1 CABLING

- The District will tie all devices to the substation ground grid.
- 12kV cabling from District switchgear to high side of project step-up transformer(s) shall be provided by the District.

3.1.2 NETWORK CONNECTIVITY

Computer equipment and connectivity to connect the ESS to the Substation Operational and Non-Operational networks as outlined in the communications diagram, Figure 2 in Attachment B, shall be provided by the District.

MESA 2 Appliance Prototype - Snohomish County PUD Deliverables

Attachment C, version 4

3.1.3 SITE PREPARATION

District will provide all site preparation including but not limited to the following:

- Perform necessary site work for installation of the battery container, PCS, step up transformer and associated conduit.
- Submit and oversee all permitting and reporting required by government entities. 1Energy to assist as necessary.
- Work with 1Energy to determine the appropriate mounting and anchoring for each piece of equipment.
- Install either precast concrete or in place slab construction.
- District Substation Engineering will manage those contracts related to the physical site construction as needed.

3.2 LABOR

District will make available its subject matter experts as required to enable physical, electrical and communication integration of ESS within the District substation environment.

3.3 DOCUMENTATION

District will allow 1Energy to review its documentation for each Safety or Agency Standard that MESA 2 is to be in compliance with.

District will allow 1Energy to review its documentation for each Safety or Agency Standard that MESA 2 is to be certified to achieve.

3.4 SOFTWARE AND COMMUNICATIONS TESTING

District will supply access to test environment for development of communication interfaces and connectivity between the 1E Intelligent Controller and the Districts SCADA/DMS and Enterprise Solution systems.

3.5 SYSTEM INTEGRATION

District will provide support for system integration including but not limited to:

- Supply access for installation of ESS to 1Energy Systems and/or install according to supplied instructions from 1Energy for purposes of production deployment.
- Supply power quality meter at Everett substation for monitoring net output of ESS and provide communications from power quality meter to the 1Energy Intelligent Controller
- 120 Vac auxiliary power feed from Everett substation for UET site controller, UET HMI, 1E Intelligent Controller and 1E HMI.
- Perform necessary work to integrate the ESS into the Districts substation operational and non-operational networks.

MESA 2 Appliance Prototype - Snohomish County PUD Deliverables

Attachment C, version 4

- Installation of the battery container, PCS, conduits, AC power cables and communication cables at Everett Substation will be performed by District Substation Construction crews or contractors.
- Arrangements for any required outages.
- Arrangements for cranes and operating crew.
- Arrangements for on-site work shack and storage for tools. However the District is not responsible for any tools lost or stolen during the work.

3.6 DRAWING REVISION PROCESS

District drawings shall be revised based on the following process

1. The District will provide 1Energy with the appropriate existing substation record drawings.
2. 1Energy will make revisions to the drawings, bubble the revisions and submit them to the District.
3. The District will review the revisions and submit comments back to 1Energy.
4. 1Energy will incorporate comments into the drawings as appropriate (this may be an iterative process). After all comments have been incorporated and drawings finalized, 1Energy shall have the drawings stamped by a Professional Engineer in the State of Washington with applicable experience.
5. 1Energy will submit the drawing back to the District and the District will issue WIP drawings for construction.
6. During construction, 1Energy and the District will track field changes to the drawings as appropriate.
7. After all construction is complete the District will As-Built all drawings and publish Installation record drawings. The Professional Engineer Stamp shall remain on the record drawings for the revisions made.

3.7 ACCEPTANCE TESTING

1Energy will prepare an Acceptance Testing Plan, which shall be approved in writing by the District, to demonstrate ESS performs in accordance with the System Design and Project Plan as defined in Section 2.2 of the MESA 2 – Scope of Work, SN2-ES-01 – Target Capabilities and Requirements, and other requirements set forth in the SOW. District personnel will conduct said acceptance testing under the direction of 1Energy and subcontractors.

MESA 2 Appliance Prototype – Roles & Responsibilities

Attachment D, version 4

1 PURPOSE AND SCOPE

This document provides a summary of the primary roles and responsibilities associated with each role for the MESA 2 Project. It is intended to be a supporting document in the creation of the contract between the District and 1Energy.

2 RELATED DOCUMENTATION

The documents listed in Table 1 are either explicitly or implicitly referenced herein.

Table 1: Related documentation

Number	Name/Description
Table to be filled out during Project Design and Project Planning phase	

3 ROLES AND RESPONSIBILITIES

3.1 1ENERGY SYSTEMS

Role	Person	Responsibility
Project Sponsor	David Kaplan	Executive Sponsor Delivery and acceptance of system.
Project Manager	Troy Nergaard	Schedule, Documentation, Reports, Meetings, Integration & Deployment Installation of equipment at selected site.
Engineering Manager	Andrew Miller	System architecture Communication network design and integration. Control system design, installation, and testing. Verification testing.
Power Systems Engineer	Jason Yedinak	Engineering design and support

MESA 2 Appliance Prototype – Roles & Responsibilities

Attachment D, version 4

3.2 SNOHOMISH COUNTY PUBLIC UTILITIES DISTRICT 1

Role	Person	Responsibility
Project Sponsor	Craig Collar	Executive Sponsor
Project Sponsor	Chris Heimgartner	Executive Sponsor
Program Manager	Will Odell	
Project Manager	Kevin Laving	Logistics SCADA/DMS system integration.
Engineering Manager	Jason Zyskowski	Site selection and preparation. Required permitting and reporting related to site preparation and use. District integration of ESS to substation physical and local control /power systems. Access to physical site location and coordination of PUD personnel to connect ESS. Acceptance testing.
Project Engineer	Bob Anderson	

RESOLUTION NO. 5687

A RESOLUTION Declaring the Modular Energy Storage Architecture (MESA 2) Energy Storage Project at Everett Substation to be "Special Facilities" for Purposes of RCW 39.04.270 and Authorizing Execution of an Agreement with Energy Services for the Project

WHEREAS, Public Utility District No. 1 of Snohomish County (the "District") has identified energy storage technology as an important component of its strategy of meeting growth first through conservation and then a diverse mix of renewable resource technologies, including distributed generation; and

WHEREAS, while battery-based storage technology is available, the industry has not developed the software and systems that would enable electric utilities to deploy battery-based storage equipment on a modular basis, and to manage the use of that storage as part of its grid operations; and

WHEREAS, District staff is proposing to enter into an agreement for the development and deployment of a prototype that will provide 2.2 megawatt/8 Megawatt-hour capacity from a vanadium flow battery-energy storage system at the District's Everett substation, known as the Modular Energy Storage Architecture (MESA 2) Project ("Project"), for a total cost of \$8,792,000, excluding tax; and

WHEREAS, the District has received approximately \$4,400,000 in funding for the Project from Washington State's Clean Energy Fund; and

WHEREAS, the Project will be developed in two phases, consisting of a system design and project plan, followed by the final design and engineering, equipment procurement and installation of the prototype upon approval of the first phase; and

WHEREAS, the agreement provides that the District will have a perpetual license for the 1Energy software system for this prototype, and the District will take title to the batteries and other equipment upon completion of the Project; and

WHEREAS, this project is the result of a unique collaboration between 1Energy Services, a software development company interested in developing this type of new software system for the electric utility industry, the District, and UniEnergy Technologies; and

WHEREAS, the District has previously entered into an agreement with 1Energy to provide for the development and deployment of a prototype that will provide one-megawatt capacity from a battery-based energy storage system at the District's Hardeson substation (the "MESA-1 Project"); and

WHEREAS, grid energy storage is a nascent field and there are very few entities experienced and qualified to perform this work; and

WHEREAS, 1Energy Systems' applicable experience (including the development of the MESA-1 Project and several other innovative energy storage-related projects) and capabilities in this field are unique; and

WHEREAS, UniEnergy Technologies, the primary subcontractor to be utilized by 1Energy, is uniquely qualified for this project since they are Washington-based, support MESA, are a current District customer, have a commercially available Vanadium-based redox Flow Battery, and have provided the District with extensive energy storage expertise during the grant funding process; and

WHEREAS, staff therefore recommends that all equipment included as part of the Project be declared "special facilities" pursuant to RCW 39.04.270 to enable the District to

contract with 1Energy for the Project without the solicitation of competitive proposals therefore, based upon the facts and circumstances more fully described above; and

WHEREAS, Washington State law provides that with respect to purchases of “special facilities,” the normal competitive bidding requirements may be waived by the Commission provided that reasonable precautions are taken to secure the lowest price practicable under the circumstances; and

WHEREAS, staff’s efforts to ensure that the District has secured the lowest price practicable under the circumstances include the review of pricing information in trade journals pertaining to vanadium-based energy storage systems; research into the experiences of other electric utilities such as Avista, and staff’s own experience with battery-based energy storage systems for MESA 1 and the Admiralty Inlet Tidal Energy Pilot Project, dialogue with a number of other participants in the global battery-based energy storage space; and the issuance of a High Tech Sales and Use Tax deferral from the Washington State Department of Revenue.

NOW, THEREFORE, BE IT RESOLVED by the Commission of Public Utility District No. 1 of Snohomish County, Washington, as follows:

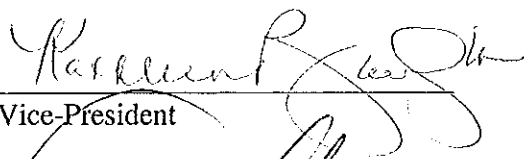
1. Based on the facts set forth above and on staff’s recommendation, all equipment included as part of the Modular Energy Storage Architecture Project shall be deemed “special facilities” for purposes of RCW 39.04.270.
2. The Commission hereby waives the statutory requirements for bid and performance bonds which are normally applicable to competitively bid material purchases that might otherwise apply to the procurement of the equipment for this Project.

3. The proposed agreement with 1Energy Services is hereby approved, and the General Manager or his designee is authorized to execute said Agreement on behalf of the District in substantially the form on file with the Office of the Commission, for a total cost of \$8,792,000, excluding taxes.

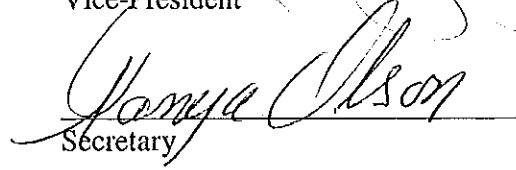
PASSED AND APPROVED this 6th day of October, 2014.

(not present)

President



Vice-President



Secretary